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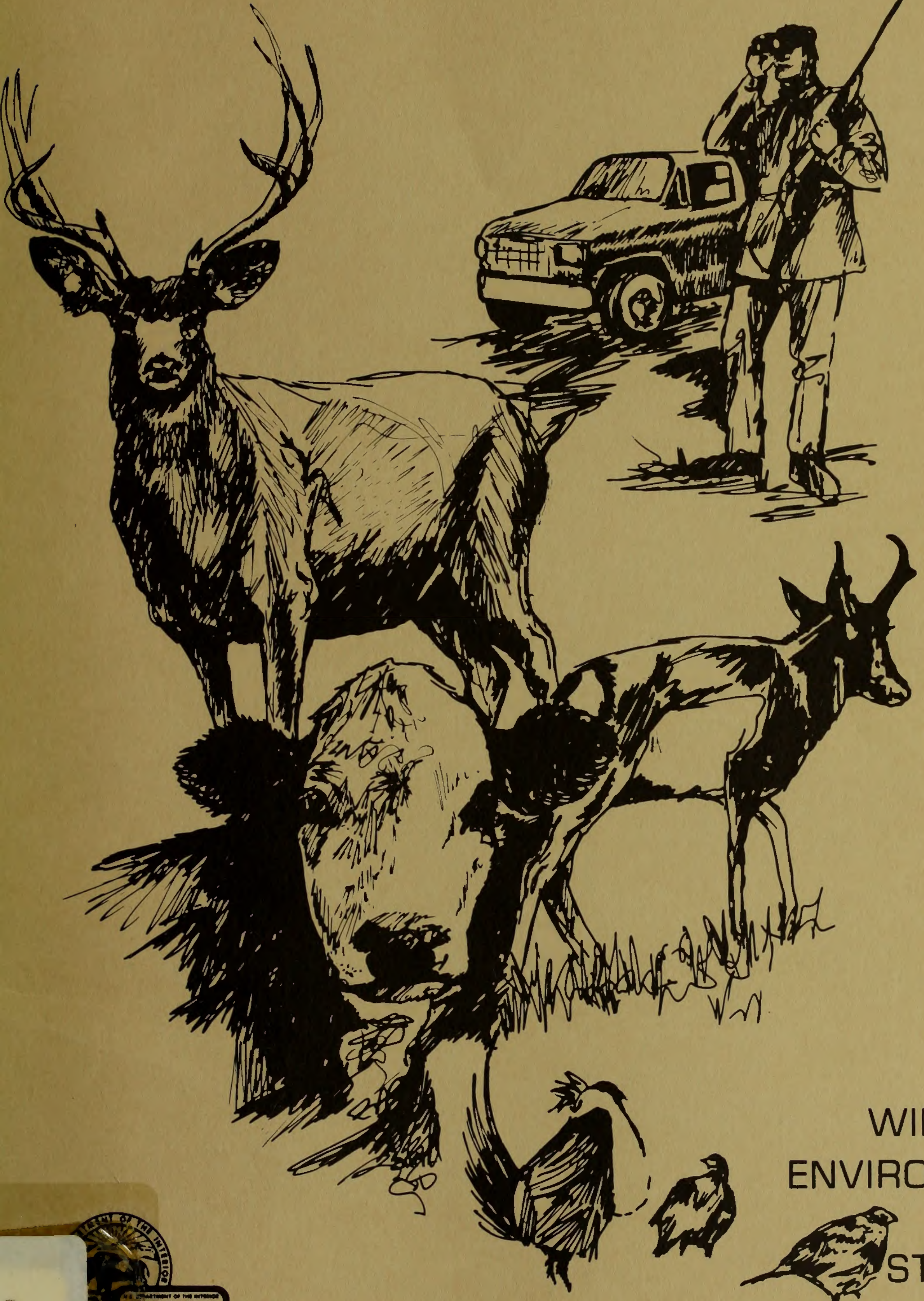

WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

March 1984

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BLM-MT-ES-84-010-4332

Dear Reader:

The Bitter Creek Wilderness Environmental Impact Statement is presented for your review and comment. This document considers the environmental impacts of designating or not designating this wilderness study area as part of the National Wilderness Preservation System. The study area consists of 59,660 acres of public land and is administered by the Bureau of Land Management's Lewistown District. The preferred alternative is discussed in Chapter 2. The environmental impacts of each alternative are considered in Chapter 4.

Written comments will be accepted through June 30, 1984. Comments should be sent to Glenn W. Freeman, District Manager, District Office, BLM, Airport Road, Lewistown, Montana 59457.

After comments are received and reviewed, a final environmental impact statement will be prepared. The final statement will consist of comments, responses to comments, and updated or corrected information from the draft. Interested parties should retain their copies of this draft for review when the final is released.

Formal hearings for public comments have been scheduled at:

Glasgow, Montana; May 15, 1984; Valley County Courthouse at 7:30 A.M.

Helena, Montana; May 17, 1984; Jorgenson's Holiday Motel, 1714 11th Avenue at 7:30 P.M.

Testimony received will be considered and responses will be prepared as part of the final environmental impact statement. Recommendations on suitability will then be forwarded to the Secretary of Interior and President for their review and recommendations. Congress will make the final decisions on those areas to be designated as wilderness.

Sincerely yours,

Michael J. Penfold

Michael J. Penfold
State Director

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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bitter creek

Wilderness Environmental Impact Statement

March 1984

PREPARED BY

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Michael J. Penfold

MICHAEL J. PENFOLD • MONTANA STATE DIRECTOR

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGMENT
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BITTER CREEK WILDERNESS ENVIRONMENTAL IMPACT STATEMENT

This Wilderness Environmental Impact Statement considers the suitability of the Bitter Creek Wilderness Study Area, containing 59,660 acres of public lands, for inclusion in the National Wilderness Preservation System.

Bitter Creek is located in the Lewistown District and is managed by the Valley Resource Area.

This study recommends that Bitter Creek not be designated as wilderness and that multiple use management continue as prescribed in the Valley Management Framework Plan and the Prairie Potholes Grazing EIS.

For further information, contact Glenn W. Freeman, District Manager, Lewistown District Office, Bureau of Land Management, Airport Road, Lewistown, Montana 59457 or phone (406) 538-7461.

March 1984

SUMMARY

PURPOSE OF THE EIS

The purpose of this EIS is to determine the suitability of the Bitter Creek Wilderness Study Area for inclusion in the National Wilderness Preservation System. This EIS is in response to Section 603 of the Federal Land Policy and Management Act, which directed the Bureau of Land Management to inventory, study and report to the Congress, through the Secretary of Interior and President, the suitability of certain lands for wilderness preservation.

SETTING

The Bitter Creek WSA consists of 59,660 acres and is located in an eroded prairie basin in northeast Montana, approximately 25 miles northwest of Glasgow and 18 miles south of the Canadian border.

ISSUES

The WSA was considered in light of issues identified during both the wilderness inventory process and the study process. Concerns were expressed through letters, formal and informal public meetings and other public contacts.

The key issues considered in the document are: grazing management, mineral (natural gas) development, recreational use and opportunities, wildlife populations and habitat management, social and economic considerations, wilderness manageability, the need for wilderness and wilderness values.

The potential benefits and the potential resource conflicts resulting from wilderness designation were identified in this document.

ALTERNATIVES

Based on the scoping and planning process, four alternatives ranging from no wilderness to all wilderness for Bitter Creek were considered. Table S.1 is an acreage summary for each alternative.

STUDY RECOMMENDATION

The BLM's proposed action is the No Wilderness Alternative. The alternative proposes that none of the 59,660 acre Bitter Creek WSA be designated as wilderness and that the area be managed for multiple use as defined in the 1978 Valley Management Framework Plan and the 1980 Prairie Potholes Grazing EIS.

MAJOR ENVIRONMENTAL CONSEQUENCES OF THE STUDY RECOMMENDATIONS

With the proposed action there would be little or no environmental impact on the grazing resource or grazing management, natural gas development, cultural resources, economic returns or wildlife populations and habitat in the WSA. The opportunity to enhance primitive non-motorized recreation and to add this prairie ecotype to the wilderness system would be foregone.

There is a minor potential for development which would reduce the existing naturalness of Bitter Creek. There would be a short term impact on 2,310 acres that would be chiseled to remove clubmoss. An additional 4 reservoirs, 2½ miles of fence and 2 miles of water pipeline with 2 or 3 stockwater tanks would be constructed in the WSA. Up to 20 waterfowl nesting islands could be constructed as funds become available.

TABLE S-1:
Bitter Creek Alternatives

	Acres Recommended Suitable	Acres Recommended Non-Suitable
No Wilderness Alternative (Proposed Action)	0	59,660
All Wilderness Alternative	59,660	0
Bitter Creek East Alternative	39,950	19,710
Enhanced Wilderness Manageability Alt.	26,000	33,660

Source: BLM, 1983

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INTRODUCTION

1

PURPOSE AND NEED

The Bitter Creek Wilderness Environmental Impact Statement (EIS) is in response to Section 603 of the Federal Land Policy and Management Act (FLPMA) of October 21, 1976. This law directed the Bureau of Land Management (BLM) to inventory, study and then report to Congress through the Secretary of the Interior and the President, the suitability of certain public lands for inclusion in the National Wilderness Preservation System (NWPS). This EIS follows the Council on Environmental Quality guidance in complying with the National Environmental Protection Act.

The BLM has set the end of fiscal year 1986 for completing wilderness studies and reporting wilderness suitability to the Secretary of the Interior.

This document completes the study requirements for 1 of the 42 wilderness study areas (WSA) in Montana. The Federal Land Policy and Management Act requires the Secretary of the Interior to report his recommendations to the President by October 21, 1991. The President has until October 21, 1993, to send the recommendations to Congress, as only Congress can designate wilderness areas.

The purpose of this EIS is twofold. The first is to analyze the effects of including the Bitter Creek WSA in the NWPS on public resources. The second is to make a recommendation on inclusion to the Secretary of Interior according to the findings of this document.

The study was conducted in accordance with BLM planning regulations (43 CFR 1601) which provides for the issuance of national policy and procedural guidance. The BLM's Wilderness Study Policy serves this purpose. The policy establishes procedures to ensure that suitability recommendations are: (1) based on full consideration of all multiple resource values of public lands, (2) consistent with established national policy and (3) that all interested and affected members of the public and state and local governments are made aware of the study and given adequate opportunity to comment and be involved in the study process.

ENVIRONMENTAL SETTING

The Bitter Creek WSA is located in Valley County, in northeast Montana, and is administered by the Valley Resource Area. It is about 25 miles northwest of Glasgow, and 18 miles south of the Canadian border (see Figure 1.1). The WSA contains 59,660 acres in three roadless segments identified as Bitter Creek South, Bitter Creek West and Bitter Creek East.

Bitter Creek South contains 8,605 acres. This segment is bounded by roads on the east, south and west and by the Northern Border Pipeline corridor and roads on the north.

Bitter Creek West contains 11,105 acres and forms the west-central part of the WSA. It is bounded on the north and east by roads, on the west by private lands and on the south by the Northern Border Pipeline.

Bitter Creek East forms the central and northern portion of the WSA and contains 39,950 acres. It is bounded on the east, north and west by roads and private land and on the south by the Northern Border Pipeline.

The three segments forming Bitter Creek consist of flat to rolling terrain varying less than 500 feet in elevation from south to north. Some extensive erosion resulting from glacial melt formed this denuded badland terrain through the center of the WSA. The vegetation consists of prairie grasses, creeping juniper, buffalo berry and other shrubs. There are isolated stands of aspen and cottonwood in the drainages. The climate is semi-arid, characterized by fluctuations in precipitation and temperature, moderately low rainfall, low humidity, hot summers and cold winters.

PLANNING PROCESS

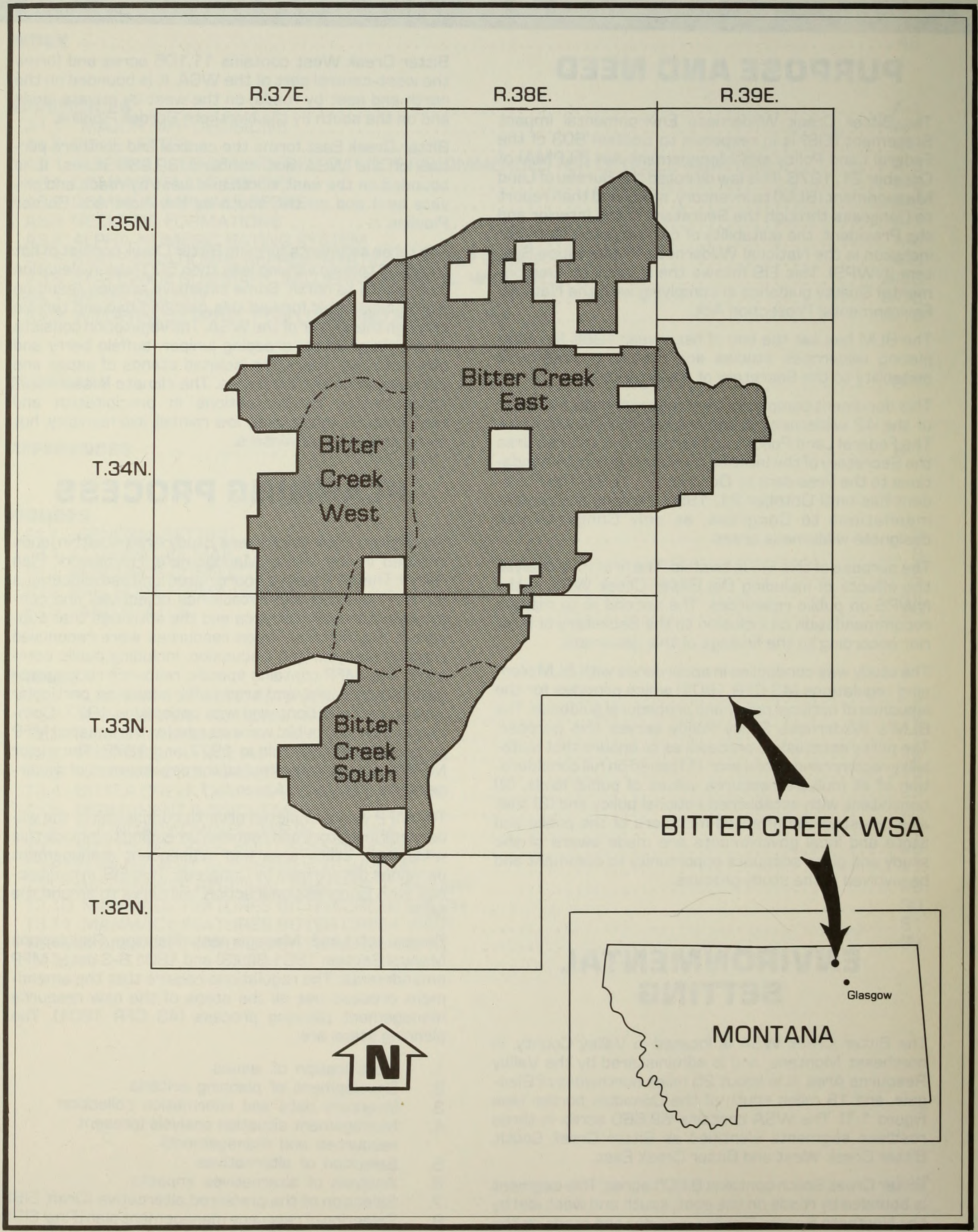
The Bitter Creek Wilderness Study Area is within lands included in the Valley Management Framework Plan (MFP). The MFP makes coordinated land use allocations for all resources and establishes objectives and constraints for each resource and the activities that support it. Conflicts between resources were reconciled through analysis and discussion, including public comment. The MFP contains specific resource recommendations, decisions and trade-offs based on particular resources conditions and was updated in 1977. Comments from the public were sought for the updated MFP by public meetings held in 1977 and 1978. The major MFP decisions that affected the development of wilderness are included in Appendix 1.1.

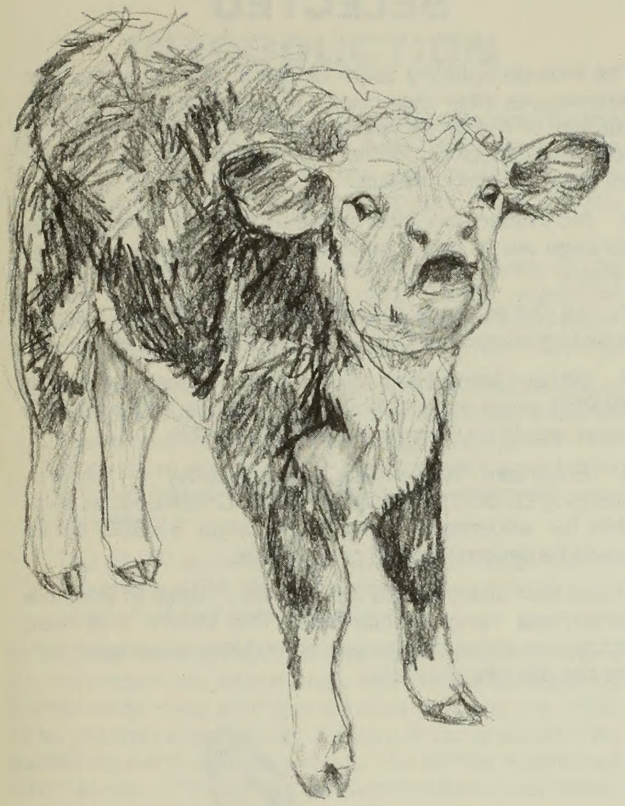
The MFP was completed prior to completion of the wilderness inventory and requires amending to include this wilderness study area and subsequent management decisions determined by Congress. This EIS, in conjunction with Congressional action, will serve to amend the MFP.

Bureau of Land Management Planning Regulations Manual Section 1601.8(b)(3) and 1601.6-3 detail MFP amendments. The regulations require that the amendment process use all the steps of the new resource management planning process (43 CFR 1601). The planning steps are:

1. Identification of issues
2. Development of planning criteria
3. Inventory data and information collection
4. Management situation analysis (present resources and management)
5. Selection of alternatives
6. Analysis of alternatives impacts
7. Selection of the preferred alternative (Draft EIS)
8. Selection of resource management plan (Final EIS)
9. Monitoring and evaluation

FIGURE 1.1 General Setting Map — Bitter Creek WSA





WILDERNESS INVENTORY

In November 1978, BLM began its wilderness review by preparing descriptions of areas of 5,000 or more roadless acres of public land and those areas of less than 5,000 acres contiguous to wilderness areas or other wilderness study areas. These study units were reviewed by the public, closely inventoried by BLM and reviewed by BLM's Montana State Director in 1979-80. The State Director then released his final decision on the WSAs having the minimum characteristics of size, naturalness and outstanding opportunity for solitude and/or primitive recreation. The *Montana Wilderness Inventory Final Decision-Bitter Creek* was released in 1980. The public could protest this final decision and a number of protests were filed. A number of appeals were filed with the Interior Board of Land Appeals after the protests were denied by the Montana State Director. The last appeal was decided in May, 1983 upholding the State Director's decision to study Bitter Creek for its wilderness suitability.

ISSUE IDENTIFICATION (SCOPING)

Throughout the inventory stage of the wilderness review, the public had opportunities to attend meetings, open houses or other informal meetings in addition to letting BLM know of their concerns in writing. From this open forum, a number of issues were brought forth.

The wilderness issue has divided public opinion in the Lewistown District. Most ranchers and local residents are opposed, while a number of state and national wilderness groups favor wilderness designation for the Bitter Creek WSA. These attitudes are detailed in the "Local Attitudes Toward Wilderness Designation" portion of the "Social Conditions" section in Chapter 3.

All issues were sent to the public as a first step in the study process (see Appendix 1.2).

In preparing this draft EIS, the interdisciplinary team and resource managers considered the major areas of public interest and concern identified through scoping. The team used the scoping process to determine which concerns would be significantly impacted by the proposed action or other alternatives. The scoping process identified the following as areas of significant concern.

1. Wildlife Mangement
   — Increased mule deer population expected.
2. Wilderness Need
   — No local support.
3. Wilderness Quality
   — Area is an unusual ecotype (prairie) not common in the Wilderness System.
4. Range Management
   — Noxious plants may increase.
   — Vegetation manipulation facility maintenance and development would be foregone.
5. Livestock Grazing
   — Permittees would lose all or some of their grazing privileges.
   — Predators may increase.
6. Minerals Development
   — Status in WSA. The Area may have high oil or gas reserves.
   — Wilderness would limit mineral development
7. Recreation Use and Opportunities
   — Elimination of vehicles may restrict some users.
8. Economic Changes
   — Gain or loss to users and to the local and regional economy.

PLANNING CRITERIA

Two planning criteria or guidelines for evaluation of public concerns were developed by BLM. The two criteria are:

Criterion No. 1. Evaluation of Wilderness Values

Consider the extent to which each of the following components contribute to the overall value of an area for wilderness purposes.

A. Mandatory wilderness characteristics: The quality of the area's wilderness characteristics — size, naturalness and outstanding opportunities for solitude or primitive recreation.

B. Special features: The presence or absence and the quality of the optional wilderness characteristics — ecological, geological, or other features of scientific, educational, scenic, or historical value.

C. Multiple resource benefits: The benefits to other multiple resource values and uses which only wilderness designation of the area could ensure.

D. Diversity in the National Wilderness Preservation System: Consider the extent to which wilderness designation of the area under study would contribute to expanding the diversity of the National Wilderness Preservation System from the standpoint of each of the factors listed below:

(1) Expanding the diversity of natural systems and features, as represented by ecosystems and landforms.

(2) Assessing the opportunities for solitude or primitive recreation within a day's driving time (5 hours) of major population centers.

(3) Balancing the geographic distribution of wilderness areas.

Criterion No. 2 Manageability

The area must be capable of being effectively managed to preserve its wilderness character.

THE ALTERNATIVES SELECTED

The interdisciplinary team selected the following four alternatives after their review of public comment, identification of resource values, evaluation of existing and potential resource conflicts and application of the wilderness planning criteria.

1. No Wilderness Alternative (Proposed Action) — No acreage would be recommended for wilderness designation.

2. All Wilderness Alternative — All 59,660 acres would be recommended suitable for wilderness.

3. Bitter Creek East Wilderness — Recommending 39,950 acres as suitable for wilderness, while 19,710 acres would be recommended nonsuitable.

4. Enhanced Wilderness Manageability — Recommending 26,000 acres within Bitter Creek East as suitable for wilderness designation, while 33,660 acres would be recommended nonsuitable.

These four alternatives will provide a range of possible wilderness recommendations. The BLM's proposed action is managements recommendation developed during the planning process.

ALTERNATIVES 2

INTRODUCTION

Chapter 2 describes the alternatives considered for the Bitter Creek Wilderness Study Area (WSA) (see Figure 2.1). In addition, a table at the end of this chapter summarizes the environmental impacts of each alternative.

Two alternatives must be considered because of the Council of Environmental Quality (CEQ) regulation 1502.14 and requirements of the Bureau of Land Management's (BLM's) *Wilderness Study Policy*. They are:

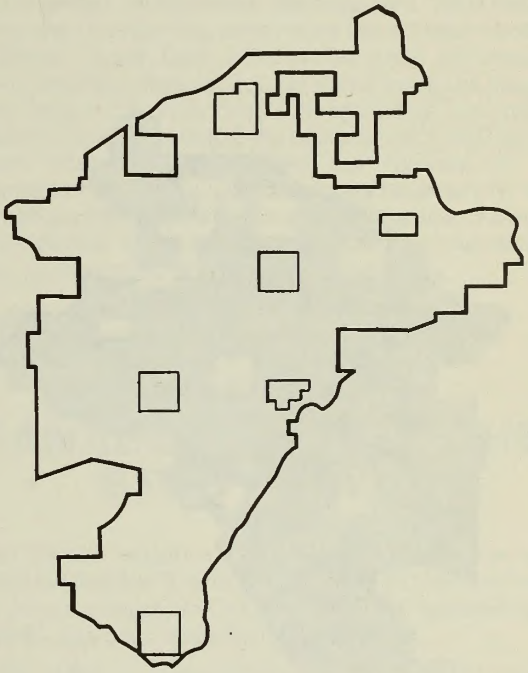
> The No Wilderness Alternative (No Action) which recommends that no part of the WSA is suitable for wilderness designation. If Congress selects this alternative, multiple use management would continue in Bitter Creek without any wilderness constraints.
>
> The All Wilderness Alternative which recommends the entire WSA (three roadless segments) as suitable for wilderness designation.

In addition to the required alternatives, one or more partial wilderness alternatives can also be considered. Partial wilderness alternatives allow portions of a WSA to be recommended either suitable or nonsuitable. Two guidelines were used to arrive at the partial wilderness alternatives; (1) to resolve conflicts between wilderness and other resource uses, and (2) to improve the long-term wilderness manageability of the WSA.

Resource conflicts would arise when other uses reduce opportunities for solitude or primitive recreation or impair natural values. The manageability of a study area is affected by the locations and types of inholdings, valid existing rights, the presence of "cherry-stemmed" or other segmenting roads, the presence of identifiable boundaries, the potential to remove unneeded manmade features and the type and location of outside influences.

DESCRIPTION OF ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Six alternatives were identified during the scoping and planning process. Two of the six were considered by the environmental impact statement (EIS) team and management, but were not recommended for detailed environmental analysis. A description and the rationale for not analyzing these two alternatives (Bitter Creek South and Bitter Creek West) is given in Appendix 2.1. The four alternatives recommended for analysis are described below and Table 2.1 summarizes each alternative by acreage.



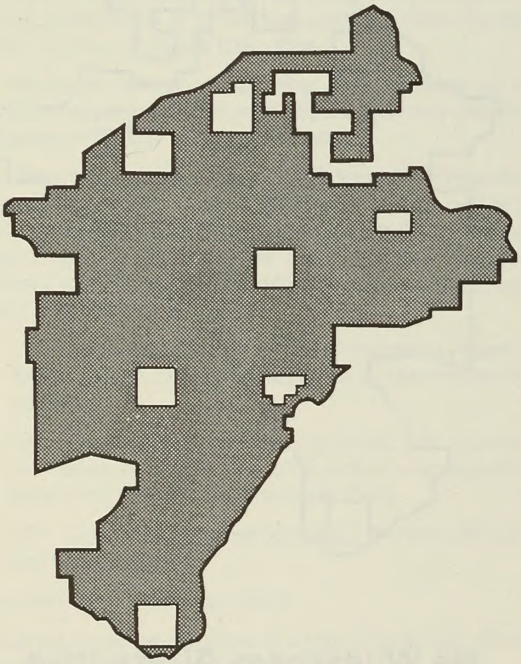
No Wilderness Alternative (Proposed Action)

No Wilderness Alternative (Proposed Action)

This alternative recommends no part of the Bitter Creek WSA be designated as wilderness. This alternative emphasizes resource production over preservation of the identified wilderness values. If Congress selects this alternative, multiple use management, as prescribed in the Valley Management Framework Plan (MFP) which is the current management situation, would continue on the 59,660 acres. Table 2.2 describes the current management situation.

All Wilderness Alternative

The all wilderness alternative recommends the entire WSA consisting of three roadless segments of 59,660 acres as suitable for wilderness designation and represents the maximum acreage that could be recommended for wilderness designation. This alternative emphasizes the preservation of identified wilderness values over the production of other resources which are or may be present in the area. Table 2.2 describes the anticipated management actions of this alternative.



All Wilderness Alternative

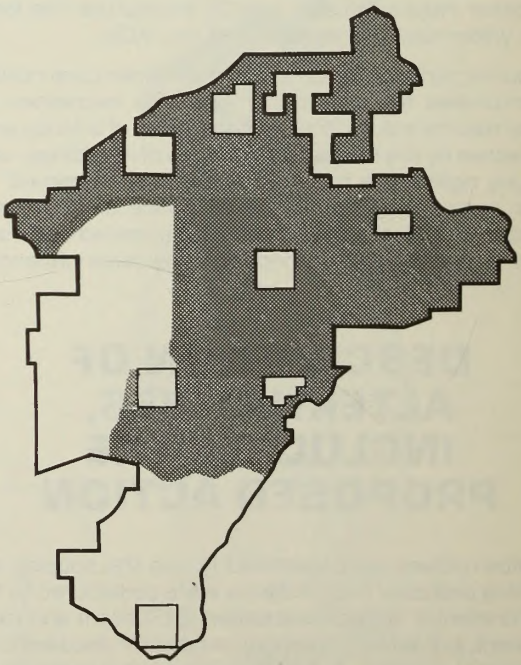
Bitter Creek East Alternative

This alternative recommends that the 39,950 acre eastern segment be designated as wilderness while the remainder of the WSA (19,710 acres) remain available for multiple use management.

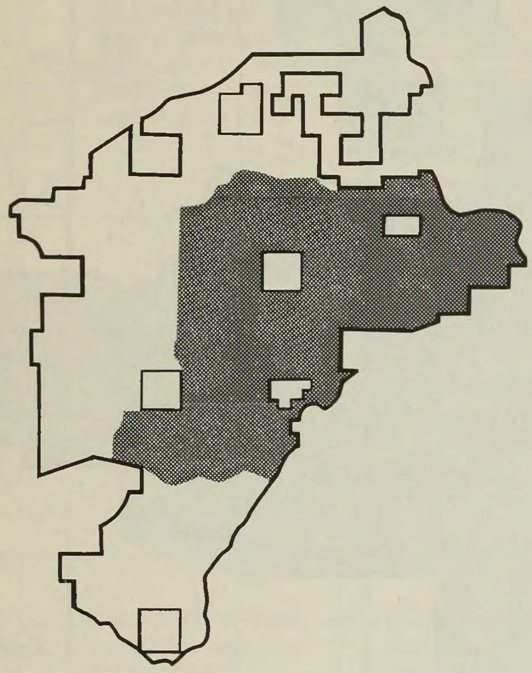
The boundary of Bitter Creek East is formed by public and private legal subdivisions on the north and primarily by legal subdivisions and a ranch access road on the east. The southern boundary is formed along the Northern Border Pipeline corridor and access road and the west boundary is formed by a ranch and recreational access road. These boundaries conform in most places to topographic features. Bitter Creek East was identified in the Montana Wilderness Inventory Final Decision — Bitter Creek as Segment D.

This alternative recommends only the area with the highest wilderness values for wilderness designation, while eliminating some but not all of the potential resource conflicts associated with the All Wilderness Alternative. The area in this alternative is the most natural appearing part of Bitter Creek. The range developments (reservoirs and fences) are scattered and mainly located near the boundaries and in the northern 1/3 of the segment.

The highly eroded nature of the lands in this alternative offers a stark badlands vista inhabited by a variety of wildlife, particularily mule deer. The Bitter Creek East study area is primarily an eroded basin surrounded by bench lands, which are mostly privately-owned. Table 2. 2 describes the anticipated management action of this alternative.



Bitter Creek East Alternative



Enhanced Wilderness Manageability Alternative

Enhanced Wilderness Manageability Alternative

This alternative emphasizes the enhancement of wilderness manageability of the study area as wilderness over the long term.

This alternative recommends that a 26,000 acre portion of the Bitter Creek East Alternative be designated as wilderness and that the remaining 33,660 acres in the WSA be determined nonsuitable and available for multiple use management.

The boundary of the Enhanced Wilderness Manageability Alternative is formed along a constructed vehicle way and the south bank of the East Fork of Willow Creek. The east boundary is the same as Bitter Creek East, along a ranch road and legal subdivisions with the exception of following a small cherry-stemmed road to and around a private inholding in T. 34 N., R. 38 E., Sections 33 and 34. The southern and western boundaries are the same as those described in the Bitter Creek East Alternative, with the exception of 180 acres in T. 34 N., R. 37 E., Section 35 which is not included in this alternative.

The Enhanced Wilderness Management Alternative retains the outstanding wilderness values described in the Bitter Creek East Alternative while eliminating many of the resource conflicts and improving the potential for long term wilderness manageability. The major change in this alternative is the exclusion of 1,040 acres of non-Federal inholdings and the removal of an extremely irregular and unmanageable boundary on the north, replacing it with a physiographic feature, the east fork of Willow Creek. Table 2.2 describes the anticipated management action of this alternative.

WILDERNESS MANAGEABILITY OF THE STUDY AREA

Based on the wilderness values of the WSA as described in Chapter 3, and the impacts on these wilderness values analyzed in Chapter 4, the manageablility of the WSA has been determined as follows:

> The WSA is manageable as wilderness only under the Enhanced Wilderness Manageablity Alternative. Under the All Wilderness and Bitter Creek East Alternatives, the number of private inholdings which could require access, the lack of topographic barriers to limit vehicle access in conjunction with private land on forming the boundary, pre-FLPMA oil and gas leases and the high structural probability of finding natural gas and a hostile local atmosphere against wilderness all combine to make the area unmanageable.

TABLE 2.1: Summary of Alternatives by Acreage

No Wilderness (Proposed Action)		All Wilderness		Bitter Creek East Alternative		Enhanced Wilderness Manageability	
Suitable	Non Suitable	Suitable	Non Suitable	Suitable	Non Suitable	Suitable	Non Suitable
0	59,660	59,660	0	39,950	19,710	26,000	33,660

Source: BLM, 1983

FIGURE 2.1 Alternative Map — Bitter Creek WSA

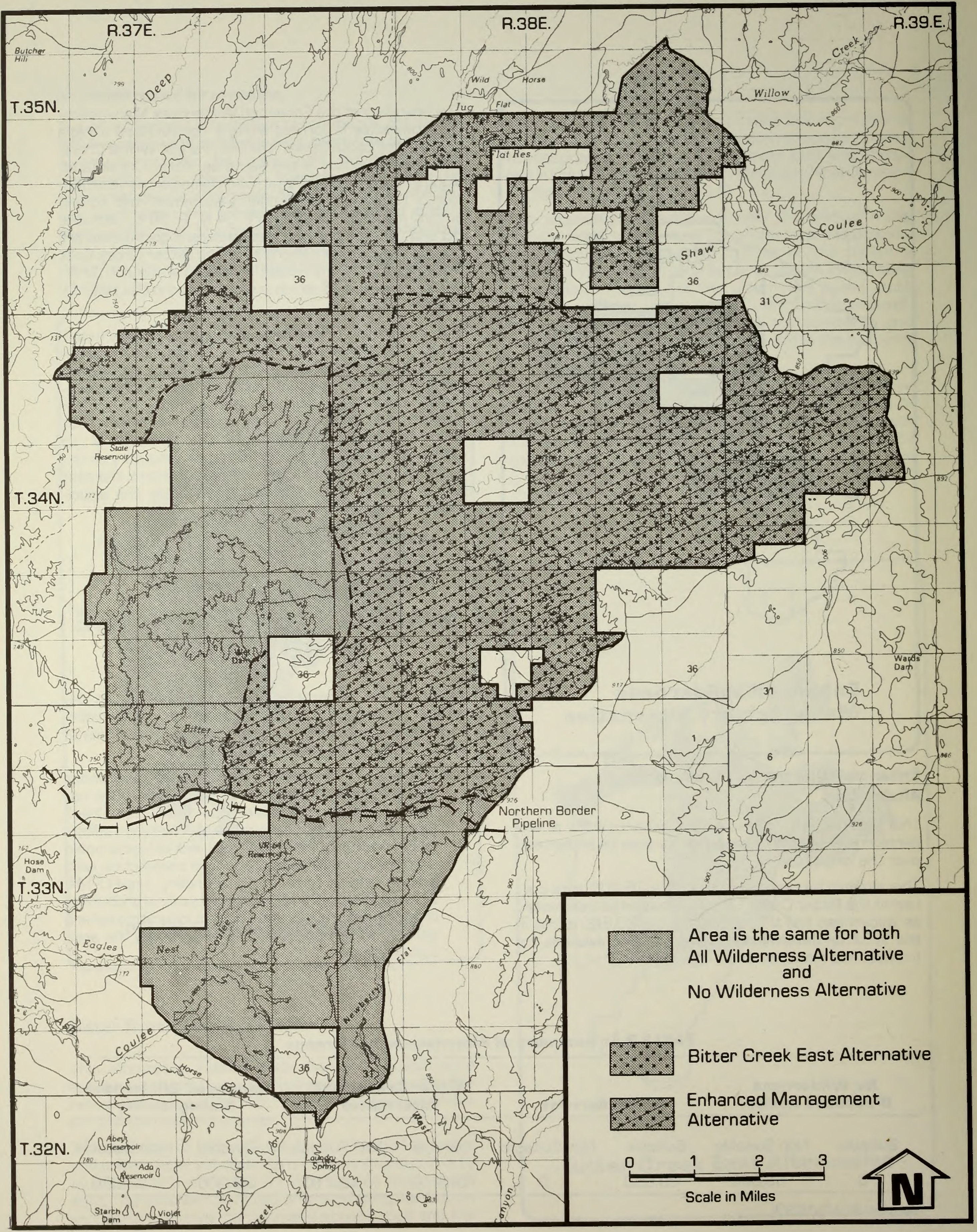


TABLE 2.2: Descriptions of Management Actions By Issue — By Alternative

ISSUE	NO WILDERNESS	ALL WILDERNESS	BITTER CREEK EAST	ENHANCED MANAGEMENT
Recreation Use	All 59,660 acres open to ORV use. Six existing vehicle ways totalling 19.5 miles open for hunting, fishing and other recreational use.	All 59,600 acres closed to ORV use. Six existing vehicle ways totalling 19.5 miles would be closed to vehicle based hunting, fishing access and other recreational use. Emphasis would be to enhance primitive non-motorized recreation.	A total of 39,950 acres would be closed to ORV use. Four existing vehicle ways totalling 12.5 miles would be closed to vehicle based hunting & other recreational use. Emphasis would be to enhance primitive non-motorized recreation. There would be 19,710 acres open to ORV use. Two existing vehicle ways of 7 miles would be open for recreational vehicle access.	A total of 26,000 acres would be closed to ORV use. Four existing vehicle ways totalling 12.5 miles would be closed to vehicle based hunting and other recreational use. Emphasis would be to enhance primitive non-motorized recreation. Two existing vehicle ways of 7 miles would be open for recreational vehicle access. A total of 33,660 acres would be open to ORV use.
Wildlife Populations	Allow unrestricted vehicle access. No management restrictions on access on 59,660 acres for hunting.	Management restrictions on all vehicle access for hunting. Emphasis would be on foot or horseback hunting.	Management restrictions on all vehicles used for hunting would occur on 39,950 acres; there would be no management restrictions on access for hunting on 19,710 acres.	Management restrictions on vehicles for hunting would occur on 26,000 acres; there would be no management restrictions on hunting on 33,660 acres.
(Predator Control)	There would be no restrictions on machine-based control (i.e. vehicles and aircraft hunting is allowed).	All vehicles and aircraft other than by Fish & Wildlife Predator Control Unit would be unauthorized.	Same as All Wilderness on 39,950 acres and same as No Wilderness on 19,710 acres.	Same as All Wilderness Alternative on 26,000 acres and same as No Wilderness Alternative on 33,660 Acres.
Wildlife Habitat	Habitat management plans can be implemented by new construction of up to 20 nesting islands, fencing up to 4 reservoirs as funds are available.	Habitat projects would only be approved if work enhanced wilderness values. Projects requiring new access or major earthwork would not be allowed if it impaired existing wilderness values.	Same as All Wilderness on 39,950 acres; up to 11 nesting islands and 3 fenced reservoirs could be built without restrictions as funds are available.	Same as All Wilderness on 26,000 acres; up to seven nesting islands and two fenced reservoirs could be built as funds are available.

TABLE 2.2: CONT.

ISSUE	NO WILDERNESS	ALL WILDERNESS	BITTER CREEK EAST	ENHANCED MANAGEMENT
(Grazing Management)	Six permittees have 7,317 AUMs.* Permittees have unrestricted use of six vehicle ways totalling 19.5 miles as well as off-road use of all 59,660 acres for livestock monitoring and repair of facilities. Permittees have use of 43 reservoirs, 1 spring development and 59.4 miles of fence. New developments proposed include 1 spring development with 2 miles of water pipeline with 2 or more stock tanks, chiseling projects on 2,310 acres, 2.5 miles of fence, and 4 reservoirs. All facilities would be constructed and maintained as funds are available.	Six permittees would have 7,317 AUMs permitted.* No ORV vehicle use would be allowed. Six vehicle ways totalling 19.5 miles would be closed except for emergency repair of facilities or for livestock emergencies such as sickness. Permittees would have use of all existing facilities and maintenance would be performed in a manner least impairing to wilderness values. In the worst case analysis, no new facilities that degrade wilderness values would be constructed even if funds were available.	Six permittees would have 4,734 AUMs permitted. * All ORV use would be eliminated on 39,950 acres. Four existing vehicle ways with 12.5 miles would be closed except for emergency repair of facilities or livestock emergencies such as sickness. There would be no restrictions on 19,710 acres on rancher access or facility maintenance other than funding. Permittees would have use of all facilities as described under No Wilderness but maintenance would have to be in a manner least impairing to wilderness values in 25 reservoirs, 44 miles of fence and 1 spring development. In the worst case, 1 spring, and 2 miles of water pipeline with tanks would not be constructed and 1,000 acres would not be mechanically treated.	Five permittees would have 2,925* AUMs permitted. All ORV use would be eliminated on 26,000 acres. Three existing vehicle ways with 10.5 miles of length would be closed except for emergency repair of facilities or livestock emergencies such as sickness. There would be no restrictions on 33,660 acres. Permittees would continue to have use of all facilities as described under No Wilderness but maintenance would have to be in a manner least impairing to wilderness values on 15 reservoirs, 25.25 miles of fence and 1 spring development. In the worst case 1 spring with 2 miles of water pipeline and 2 tanks would be constructed.
(Weed Control)	Noxious weeds would be controlled by chemical means. Two acres have been treated to date.	Noxious weeds would only be controlled if a threat to adjacent lands outside WSA.	Noxious weeds would only be controlled if a threat to adjacent lands outside the WSA on 39,950 acres. Noxious weeds would be controlled by chemical means as needed on 19,710 acres.	Management of noxious weeds on 26,000 acres would be as described under All Wilderness. Noxious weeds would be controlled by chemical means as needed on 33,660 acres not recommended for wilderness.

*There would be no changes affecting the current level of authorized grazing permits. Future grazing operations would be managed consistent with the Wilderness Management Plan (WMP). Modifications to current or proposed allotment management plans (AMPs) may result from directions provided by the Wilderness Management Plan that would be prepared for Bitter Creek if it were designated as wilderness.

TABLE 2.2: CONT.

ISSUE	NO WILDERNESS	ALL WILDERNESS	BITTER CREEK EAST	ENHANCED MANAGEMENT
(Fire Control)	Control all fires on all 59,660 acres whether natural or man caused.	Fire would be controlled only where it threatened adjacent lands or human life or property inside the WSA.	Natural fire would be controlled on 19,710 acres. On 39,950 acres, fire would only be controlled where it threatened adjacent lands or human life or property inside the WSA.	Fire would be controlled on 33,660 acres as described under No Wilderness. On 26,000 acres fire would be controlled only as described under All Wilderness.
Minerals (Natural Gas)	Sixteen pre-FLPMA leases containing 7,620 acres within WSA. Fifty-four post-FLPMA leases containing 47,080 acres. All leases can be developed with only standard stipulations with no special restrictions. No differentiation would be made between pre- and post-FLPMA leases. New leases would be issued as old leases expire.	The 16 pre-FLPMA leases could be developed with no special restrictions. The 54 post-FLPMA leases in the worst case would not be explored or developed. New leases would not be issued as old ones expire under present management direction.	The nine pre-FLPMA leases of 3,180 acres could be developed with no special restrictions. Thirty-nine post-FLPMA leases of 36,770 acres in the worst case would not be explored or developed. New leases on either pre- or post-FLPMA leases would not be reissued if they expire on the 39,950 acres recommended for wilderness in this alternative. There would be no special restrictions and leases would not be reissued on the 19,710 acres not recommended for wilderness.	The three pre-FLPMA leases of 1,790 acres could be developed with no special restrictions. In the worst case 25 post-FLPMA leases on 24,210 acres would not be explored or developed. New leases on either pre- or post-FLPMA leases would not be reissued if they expire on the 26,000 acres recommended suitable in this alternative. There would be no special restrictions and leases would be reissued on the 33,660 acres not recommended for wilderness in this alternative.
Economic Values	Maximize resource use to receive highest dollar returns.	No emphasis on dollar return from resources. Resource developed only when wilderness values can be enhanced or preserved.	No emphasis for economic returns on 39,950 acres while returns and resource development would be emphasized on 19,710 acres.	No emphasis on economic returns on 26,000 acres while returns and resource development would be emphasized on 33,660 acres.
Wilderness Values	Preserve wilderness values only to the extent that there is no conflict with development of other resources.	Preserve wilderness values is key objective even if other resources cannot be developed.	Preserve wilderness values on 39,950 acres while action would be as described in the No Wilderness Alternative on 19,710 acres.	Wilderness values would be protected on 26,000 acres while actions described in No Wilderness would occur on 33,660 acres.

Source BLM 1984

The environmental affects of each of the alternatives are considered in detail in Chapter 4. Table 2.3 summarizes these impacts.

TABLE 2.3: Impact Summary

ALTERNATIVES	Wilderness Values	Recreational Use	Wildlife Populations & Habitat
No Wilderness (Proposed Action)	Naturalness slightly reduced on 2,310 acres which would be chiseled; 4 or more new reservoirs, 2 miles of water pipeline with 3 stock tanks and 2½ miles of fence would be built; 2,000 acres with good potential for additional development of vehicle ways for hunting would remain open.	No impact	No impact
All Wilderness	The existing levels of naturalness and solitude would be retained on 59,660 acres.	Up to 56% decrease in hunting use over long term; Up to 38% increase in non-hunter use for first 2 years after designation, then returning to near or below existing low levels.	Up to a 25% increase in mule deer populations creating a possible over population; Would create a secure area for all wildlife species. Up to 20 waterfowl nesting islands would not be constructed.
Bitter Creek East	The existing levels of naturalness and solitude on 39,950 acres would be maintained; Naturalness would be diminished on portions of 19,710 acres recommended non-suitable; 1,060 acres would be chiseled, 4 reservoirs would be reconstructed.	Up to 50% decrease in hunter use over long term. Up to 38% increase in non-hunter use for first 2 years returning to near or below existing low levels after that.	Same as all wilderness except that 11 waterfowl nesting islands would not be constructed.
Enhanced Wilderness Manageability	Existing Wilderness values would be maintained on 26,000 acres; Naturalness would be reduced on part of 33,660 acres, recommended non-suitable; 2,310 acres would be chiseled, 4 reservoirs would be constructed.	Up to 33% decrease in hunter use over long term; up to 38% increase in non-hunting use over first 2 years after designation returning to near or below existing low levels.	Same as all wilderness except that up to seven waterfowl nesting islands would be constructed.

TABLE 2.3: CONT.

ALTERNATIVES	Grazing Management	Minerals (Natural Gas)	Economics
All Wilderness	No impact	No impact	No impact
No Wilderness	373 AUMs foregone due to restrictions on range improvements; Underutilized areas proposed for projects to improve livestock distribution will remain static.	Restrictions could preclude further exploration and development on 52,040 acres in the short term and 59,660 acres in the long term on land rated as showing high structural potential for natural gas.	Increased ranch expenses of $530 and up to 640 additional hours of labor annually; Loss of up to 373 AUMs could reduce livestock sales by $6,900 annually; Decreased hunting could reduce regional hunting expenditures by $4,250 while non-hunting expenditures could increase by $600 annually.
Bitter Creek East	168 AUMs foregone due to restrictions on range projects. Underutilized areas recommended for increased use as a result of new range projects would remain static.	Restrictions could preclude further exploration and development of 36,770 acres in the short term and 39,950 acres in the long term on land having high potential for natural gas.	Increased ranch expenses of $450 and up to 460 additional hours of labor annually; Loss of up to 168 AUMs could reduce livestock sales income by $3,100 annually; Hunting expenditures could decrease by $3,825 annually.
Enhanced Wilderness Manageability	No AUMs foregone. Potential to reduce overutilized areas from a heavy-severe to moderate heavy foregone if 2 mile pipeline and stock tanks are not constructed.	Restrictions could preclude further exploration and development on 24,210 acres in the long term on lands having high potential for natural gas.	Increased ranch expenses of $360 and up to 260 additional hours of labor annually; hunting expenditures could decrease by 2,550 annually.

Source BLM 1984

AFFECTED ENVIRONMENT 3

CLIMATE

Summer temperatures are hot with average maximum temperatures in the high 90° Farenheit (F) range. Winters are cold, characterized by many days of sub-zero temperatures. Minimum temperatures have been as low as -59° F.

The wilderness study area (WSA) averages 10-15 inches of precipitation annually. Approximately 83% of this precipitation falls during the period between April 1 and September 20 with May and June being the wettest months. In the fall, winter and early spring precipitation falls mostly as snow.

Summer winds have hourly speeds of 7-15 miles per hour (MPH). Strong winds in excess of 60 MPH are not uncommon and may blow for several days at a time.

AIR QUALITY

Air quality is excellent in Bitter Creek because of the lack of human activity and nearby industry. All public lands have Class II air quality (good) set by the State of Montana. Particulate concentrations are highest during spring and summer due to nearby farm operations (such as plowing) and lowest in the winter.

TOPOGRAPHY

The Bitter Creek WSA is located in the glaciated Missouri Plateau. The topography consists of flat to gently rolling terrain with some areas where extensive erosion has formed rugged denuded badlands terrain. Elevations within the WSA range from 2,500 feet in the southern part of the area to 3,000 feet in the northern portion. Drainages consist primarily of intermittent tributaries of Bitter Creek, which drain south into the Milk River.

RECREATION

Big game, upland game and waterfowl hunting are the major recreational activities in the WSA. Based on an interpolation of the results of aerial overflights by Bureau of Land Management (BLM) during hunting season, approximately 450 hunter days are spent in the area annually. The area is known locally as a source of trophy mule deer bucks. Reservoirs in the WSA provide waterfowl habitat and some limited hunting opportunities. One of the reservoirs (Gay) is a trout fishery and receives approximately 100 fisherman days per year.

Off-road vehicle (ORV) use, usually associated with hunting, is common in the WSA. Public input during the wilderness inventory and study process pointed out current ORV use in the WSA for hunting, sightseeing, and visiting ancestral homestead sites by homesteader descendants. A number of two-wheeled tracks in the WSA attest to ORV travel. Local residents also use the WSA for snowmobiling during good snow years.

Other possible recreational uses include camping, backpacking and nature study. Participation in these sports is limited by inclement weather and by the availability of better opportunities much closer to population centers.

Although no visitor use statistics, other than for hunting, exist for Bitter Creek, BLM recreation planners estimate that approximately 150 non-hunting visits occur yearly in the WSA. Of these, approximately 100 visits are associated with fishing in Gay Reservoir and approximately 5 are visits by the elderly and/or handicapped individuals.

Projected Visitation Trends in the WSA

The UL Bend Wilderness Area (approximately 100 miles southwest of Bitter Creek), managed by the United States Fish and Wildlife Service (USFWS), is the component of the National Wilderness Preservation System most like Bitter Creek WSA in ecotype, regional proximity and probable usage.

Before designation, UL Bend saw some vehicle-based visitation by fishermen traveling to Fort Peck Lake and by hunters during the big game season (October and November). Wilderness designation restricted vehicle use and visitation dropped. The USFWS states usage is presently up to pre-designation levels but is still very limited. Present users include boaters during the summer months and several hunting parties who pack into the area during the fall.

This visitation pattern could be repeated if this WSA were designated as wilderness. Vehicle-based hunting would be cut off. Non-motorized hunter use would increase but not to existing levels. Given the size and openness of this WSA, which makes it less conducive to walk-in hunting, designation as wilderness would probably decrease the overall recreational use from existing levels. There are few special features in the WSA which would attract visitors other than those looking for specific wilderness experiences. The type of users would change as vehicle-based recreationists would be replaced by foot or horseback users. People from outside the state would probably be more likely to visit this area than prior to designation.

CULTURAL

Information about cultural resources in the WSA has been collected mainly from clearances conducted for range projects. Other archeological fieldwork (random sampling) has also contributed data, providing information about the number, quality and type of prehistoric and historic features present in the study area.

Remnants of human occupation dating back 12,000 years can be found in the WSA and the surrounding region. Prehistoric people who frequented the areas were hunters and gatherers. They shifted residences in response to seasonal changes in food resource opportunities and the never-ending needs of defense, shelter, water, fuel and raw materials for tool production. These groups were usually small, possessing only what appears to be a limited set of stone, wood and bone tools. Bison eventually became a major food source as newer techniques of trapping the animals were developed.

The remaining traces of these early people include tipi rings, lithic scatters, bison butchering sites and isolated stone tools and approximately 50 of these prehistoric sites have been identified in the WSA. The majority of these have been discovered in the northern and southern most portions of the WSA.

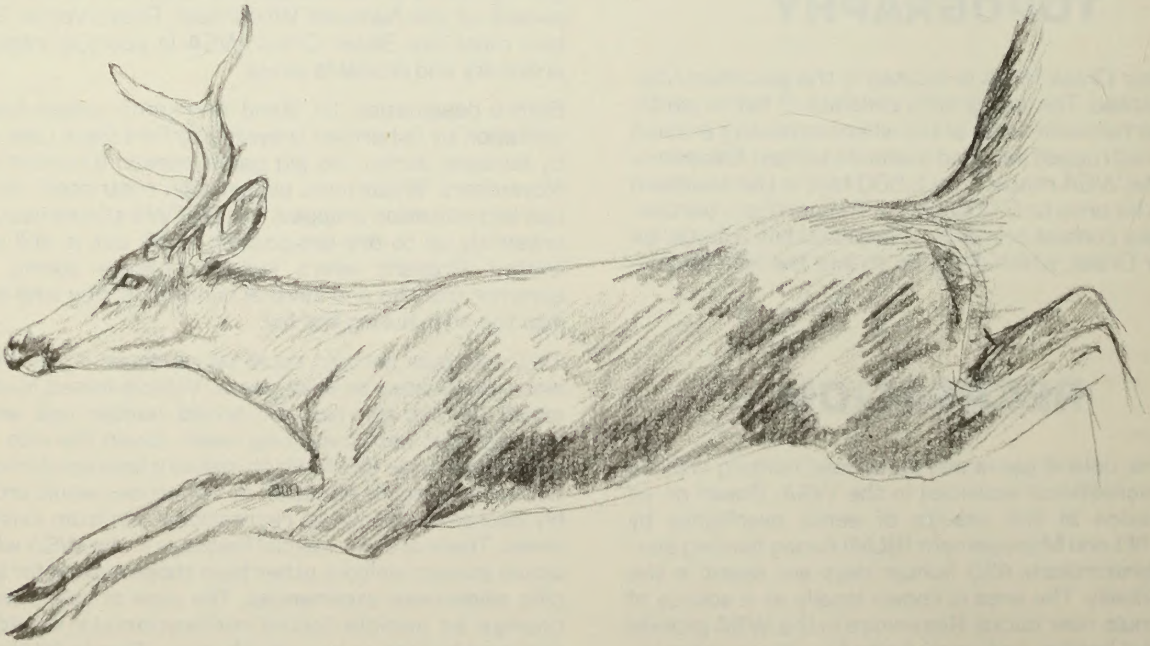
Approximately 8,000 acres within the WSA are land utilization lands. These lands were in private ownership for a time then reverted back to public ownership. A small percentage (probably less than 5%) of these 8,000 acres were improved by homesteaders. These improvements consisted mostly of picking rock and plowing. Today there is little evidence of these activities other than an occasional rock pile.

WATERSHED / SOILS

The Bitter Creek WSA consists of two distinct soil types. The first type includes approximately 70% of the study area and consists of shallow to moderately deep acid clay soils on moderately steep to very steep shale uplands. These lands consist of dissected drainage systems with shale outcrops on the ridge crests and steep side slopes. These are marginal rangelands with only 35-45% ground cover. The surface is characterized in many places by deposits of glacial rock. These soils are characterized by moderate to high runoff and the erosion potential is considered moderate to severe. The second type includes approximately 30% of the area and contains high bench remnants of continental glacial till. Soils are deep clay loam glacial till mantle on nearly level to gently rolling topography. The soils support substantially more ground cover and higher production potential. Runoff and erosion potential are both moderate.

Water Quality

Waters in the WSA contain high concentrations of ionic salts (highly saline) and are rated as fair to poor depending on the time of year and the source. This water is used by livestock and wildlife.



GRAZING MANAGEMENT

There are presently six operators with grazing permits in the Bitter Creek study area. There are 7,317 animal unit months (AUMs) (see glossary) of grazing privileges within the WSA. Table 3.1 lists the allotment names and numbers, seasons-of-use and AUMs. Figure 3.1 shows the allotment boundaries within the study area.

Table 3.2 shows the type and number of proposed range improvements for each allotment in the WSA. These proposals are preliminary reservoir locations that have not been staked, nor have archeological or other clearances been obtained.

Livestock is trampling and overutilizing important grasses and other vegetation along the bench tops and scarp in the Southfork Bitter Creek Allotment No. 4054 (see Figure 3.1) and current utilization levels are heavy-severe (61-80%).

The western 1/3 of the Upper Canyon Creek Allotment No. 4071 (see Figure 3.1) is being underutilized by livestock due to poor distribution. It is estimated the area is receiving slight-light use (0-40%). Utilization is determined by the amount of the current year's growth removed.

VEGETATION

The most common plant species in the WSA include western wheatgrass, needleandthread, blue grama, prairie sandreed, native legumes, silver sagebrush, creeping juniper, chokecherries, silver buffaloberry and isolated non-commercial stands of aspen (see Appendix 3.1 for a detailed list of plant species).

No rare or endangered plant species are known to exist on public lands in the WSA.

Noxious and Poisonous Plants

Leafy spurge is the only noxious plant found in the WSA and is found on approximately 2 acres within the WSA. This area has been treated with herbicides.

Plants poisonous to livestock are also found in the WSA but have not posed any major problems to date. These species are cocklebur, greasewood and chokecherry.

Fire Suppression

The BLM fire suppression program has attempted to minimize fire damage through the use of ground pumpers and fire crews. Historically, this area has had very little fire.

TABLE 3.1:
Grazing Preference in the Bitter Creek WSA

Allotment Name	Management Status	Allotment Number	Season	Federal AUMs Allot.	Federal AUMs WSA
Anderson-Ojuel	E	4041	05/15 — 08/31	2572	425
Eastfork Willow Cr.	E	4053	06/25 — 10/03	2013	1589
Southfork Bitter Cr.	P	4054	08/31 — 10/29	1333	1333
	P	4055	04/15 — 08/30	2314	284
	Pot.	4056	05/16 — 09/20	393	17
Upper Canyon Cr.	P	4071	04/01 — 10/31	1459	800
Upper Willow Cr.	E	4718	05/15 — 10/17	3944	1704
Bitter Cr.	P	4722	03/01 — 02/28	439	77
Eagles Nest Coulee	E	4726	05/01 — 11/30	2823	1088

E = Existing AMP; refer to the individual AMP for the specific year-to-year season.
P = Proposed AMP
Pot. = Potential

Source: BLM, 1983

FIGURE 3.1 Resource Conflicts — Bitter Creek WSA

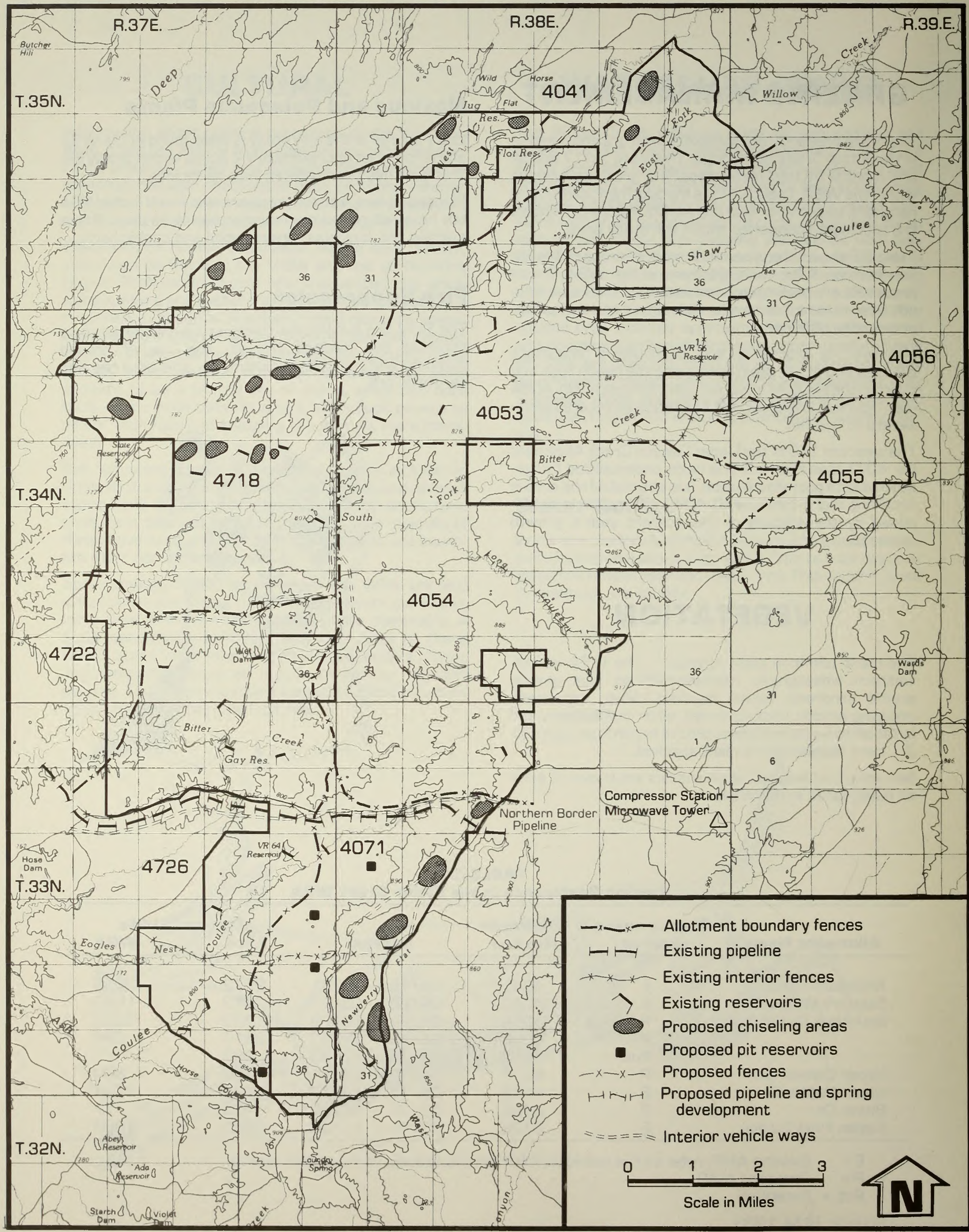


TABLE 3.2:
Proposed Range Improvements

Allotment Name and Number	Fences (Miles)	Reservoirs (Number)	Springs (Number)	Pipelines (Feet)	Chiseling (Acres)
Anderson Ojuel No. 4041					500
Eastfork Willow Cr No. 4053					
Southfork Bitter Cr.					
No. 4054			1	10,560	
No. 4055					
No. 4056					
Upper Canyon Cr. No. 4071	2.5	4			450
Upper Willow Cr. No. 4718					1,360
Bitter Creek No. 4722					
Eagle Nest Coulee No. 4726					

Source: BLM, 1983

WILDLIFE

The wildlife found in the Bitter Creek WSA is typical of the eastern glaciated plains. The abundance of some species is attributed to the higher percentage of badlands/breaks landform in this unit than in adjacent areas (see Table 3.3). Appendix 3.2 is a detailed list of the animal species common to this area.

Big Game

Mule deer are abundant throughout the WSA. The badland/breaks landform lends itself to the needs of these deer on a year long basis and is especially important as winter habitat. Approximately 26,000 acres are considered important as winter habitat. This habitat is primarily located in the Eagle's Nest Coulee, Southfork Bitter Creek and Eastfork Willow Creek drainages.

A few white-tailed deer occur in a small portion of this WSA. The quaking aspen groves around the eastern perimeter of the WSA provide the only suitable whitetail habitat of any consequence within the study area.

Antelope use both the breaks and benchlands of the WSA. Their spring, summer and fall numbers are moderate in this area, probably due to rough topography. However, winter concentrations of pronghorn occur in this WSA as it does provide approximately 8,300 acres of crucial winter habitat. This habitat is similar to the mule deer winter habitat in general location.

Elk have been sighted occasionally near the boundaries of the WSA. These animals are probably transients from the Missouri Breaks and only passing through, although one or more may remain for sometime.

TABLE 3.3:
Wildlife Occurrence & Relative Abundance Estimates

(Species)	(No./mile^2)
BIG GAME	
Mule deer	8.0 — 10.0
Pronghorn antelope	0.4 — 0.7
UPLAND GAMEBIRDS	
Sage grouse	4.1 — 16.4
Sharptailed grouse	4.8 — 12.9
Gray partridge	0.2 — 0.5
WATERFOWL	
Ducks	8.6 — 14.0
Canada geese	0.1 — 0.2
ENDANGERED	
Gray wolf	0 — 0.02
Peregrine falcon	0 — 0.01
Bald eagle	0 — 0.03

These figures are average population estimates for the entire WSA and include areas of high and low wildlife densities as well as areas considered non-habitat.

Source BLM 1984

Upland Gamebirds

Sage and sharp-tailed grouse can be found in this WSA. Population levels of these two species would best be characterized as moderate. Small numbers and widely scattered flocks of gray, or Hungarian partridge also occur within the WSA.

The sage grouse are associated with the silver sage stands of the drainage bottoms and benchlands. The sharptails occur along the buffaloberry-lined coulees and adjacent grassy uplands. The Hungarian partridge can occasionally be found in any of the habitat types, but prefer the farmland areas along the borders of the WSA.

Waterfowl

All the geese, ducks and shorebird species common to the eastern glaciated plains portion of Valley County can be found in the Bitter Creek area (with the exception of the mountain plover, which occurs only in south Valley County). Approximately 10 waterfowl nesting islands have been constructed to improve nesting habitat. Up to 20 additional nesting islands are possible, depending on future funding.

Furbearers

The principal furbearing mammals in this WSA are the muskrat, beaver, badger, fox and infrequently, mink. No density/occurrence data is available. Bobcat occurrence is possible but unlikely as there have been no verified sightings. Skunks and weasels also occur in Bitter Creek.

Predators

The most numerous and economically important predator is the coyote with heavy harvest for fur occurring during favorable market and snowfall years. No trend information is available, but it is assumed their numbers are starting to recover after deep snow packs several winters ago allowed significant harvest by aerial hunters.

Nongame Species

The entire compliment of nongame species which use the eastern glaciated plains are found in the WSA. This would include 11, species of reptile/amphibians, 113 species of birds and 19 species of mammals.

Fisheries

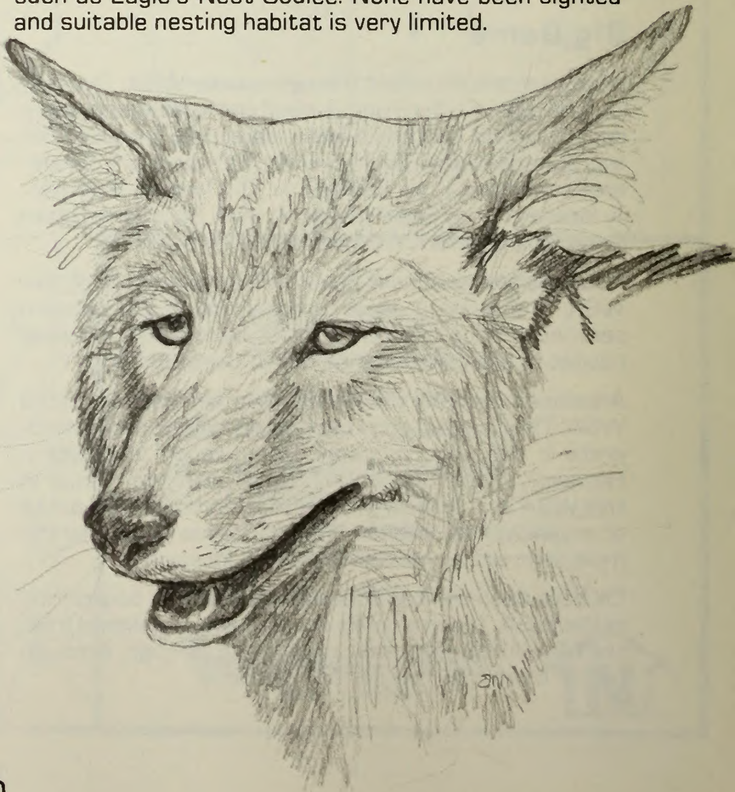
One significant fishery occurs in the study area: Gay Reservoir, T. 33 N., R. 37 E., Section 17. The pond is stocked with rainbow trout and receives moderate recreation use (estimated 100 fisherman days annually).

A potential fishery exists at Flat Reservoir, T. 35 N., R. 38 E., Section 21. Largemouth bass were stocked in this pond by the Montana Department of Fish, Wildlife and Parks in 1982. The population has not been sampled and further investigations will be made to determine if it will be a suitable fishery. No fisherman use is known at this time.

Threatened/Endangered Species

The gray wolf has been reported in this area. A long history of wolf sightings (unverified) exists in the Bitter Creek area. It is assumed that most wolves in this WSA would be the Canadian transients (possibly the MacKenzie Valley subspecies).

Migrating bald eagles pass through this area. There has been one documented sighting in the WSA. Peregrine falcons may migrate through or could occur in areas such as Eagle's Nest Coulee. None have been sighted and suitable nesting habitat is very limited.



GEOLOGY

The geologic history of the Bitter Creek WSA is one of repeated advances and retreats of sea waters. Marine deposits of sandstone shale and limestone were formed over the base precambrian, or earliest rock, 225 million years ago. During the fluctuation of the seas, dead and decaying marine life may have been trapped in pockets. These trapped materials under the right conditions may have been converted to hydrocarbons. The number of additional advances and retreats of the sea 135-180 million years ago followed by repeated uplifting, folding and faulting resulted in additional thick terrestrial sediments being deposited deep in the earth's surface. These deposits also, under the right conditions, could have been converted to hydrocarbons. During more recent geologic history volcanic activity deposited volcanic ash throughout the area. During the last 2-3 million years, the region has periodically been covered by glaciers. The study area has remnants of this glaciation with numerous deposits of granitic rocks carried with the glaciers from the north. Appendix 3.3 shows the geologic formations common to the WSA.

ENERGY AND MINERAL RESOURCES

There is no known mineral production within the Bitter Creek WSA. However, the area does have the potential for bentonite, uranium, natural gas, sand and geothermal energy sources.

Resource Potential

In order to better evaluate the occurrence or potential occurrence of these energy and mineral resources a two-part resource classification system has been adopted. Each resource or potential resource received an alpha-numeric classification. The number designation ranged from 1-4 and indicates the favorability of the geologic environment, geologic process and mineral occurrences for the presence of a particular resource or group of resources (with the number 4 representing the highest favorability). The letter designation ranged from A-D and indicates the level of confidence assigned to the numerical designation (with the letter D representing the highest level of confidence). Appendix 3.4 is an explanation of the rating system.

The following probabilities and classifications were assigned to these potential energy and mineral resources: Bentonite was given a moderate probability and a 3C classification (while bentonite could occur on approximately 55,950 acres, there are no identified deposits and no indication of economic interest); sand and gravel were given a low probability and a 2B classification; uranium was given a low probability and a 2B classification; gas was given a high probability and a 4D classification; and geothermal energy sources were given a low probability and a 2D classification.

Natural Gas

Natural gas is the only resource having a high potential rating in the WSA.

Gas has historically accumulated in thin sandstone stringers of the Colorado Shale of the Upper Cretaceous age. Any upward migration of gas, from a generating zone, would be trapped in these sand stringers between impermeable bentonitic shales along the margins of the Bowdoin Dome south of the WSA (Rice et al., 1980). Information on gas potential within the WSA is sparse and no estimate of potential production from this WSA is made in this EIS. From 1972 to 1981 Valley County's wildcat success rate was 0% while adjacent Phillips County's success rate was 15%. A detailed examination of well logs would be needed to determine whether suitable horizons for the accumulation of gas exists. For analysis purposes it's assumed that natural gas could occur throughout the 59,660 acre WSA. Presently there are no producing leases in this WSA.

The economics of any gas resources which might be found in the study area is dependent on pressures, volumes, and BTU content. Based on the geology and history of gas development in northcentral Montana, gas reservoirs in the study area can be expected to be of low pressure and low volume. If gas reservoirs of ample volume can be established in the area, a market for this resource would appear to be available through the pipeline system now serving the Bowdoin Dome gas field, 16 miles southwest of the WSA.

Mineral Location and Leasing

The Federal government owns the mineral rights on all the public land in the study area. Federal minerals are available to the public under the mineral leasing laws. The WSA is approximately 91.7% leased for oil and gas exploration; either prior to the passage of Federal Land Policy and Management Act (FLPMA) in October of 1976 (pre-FLPMA), or after that date (post-FLPMA).

There is a key difference in how pre and post-FLPMA leases can be developed. Pre-FLPMA leaseholders have valid existing rights to explore and develop the leases at anytime, regardless of how wilderness values are affected. In the case of post-FLPMA leases, any exploration or development must not degrade wilderness values in the WSA. Any activities which have the potential to degrade wilderness quality will not be allowed. A wilderness area with a high percentage of post-FLPMA leases would potentially restrict opportunities for leaseholders to explore their leases.

Pre-FLPMA leases are constantly expiring and if reissued, become post-FLPMA. By October 1986, all pre-FLPMA leases not classified as producing leases, will have expired. No other minerals are presently leased in the WSA. There are no known locatable minerals in the study area and no existing mining claims. A United States Geologic Survey/Bureau of Mines mineral survey will be performed on all areas which the Director recommends as preliminary suitable for designation.

Table 3.4 shows the number and acreages of both pre-FLPMA, post-FLPMA, and pending simultaneous leases in Bitter Creek. Figure 3.2 details the location of these pre- and post-FLPMA leases. The unleased areas will not be released as long as the study area remains a WSA based on present policy.

FIGURE 3.2 Leases and Claims Map — Bitter Creek WSA

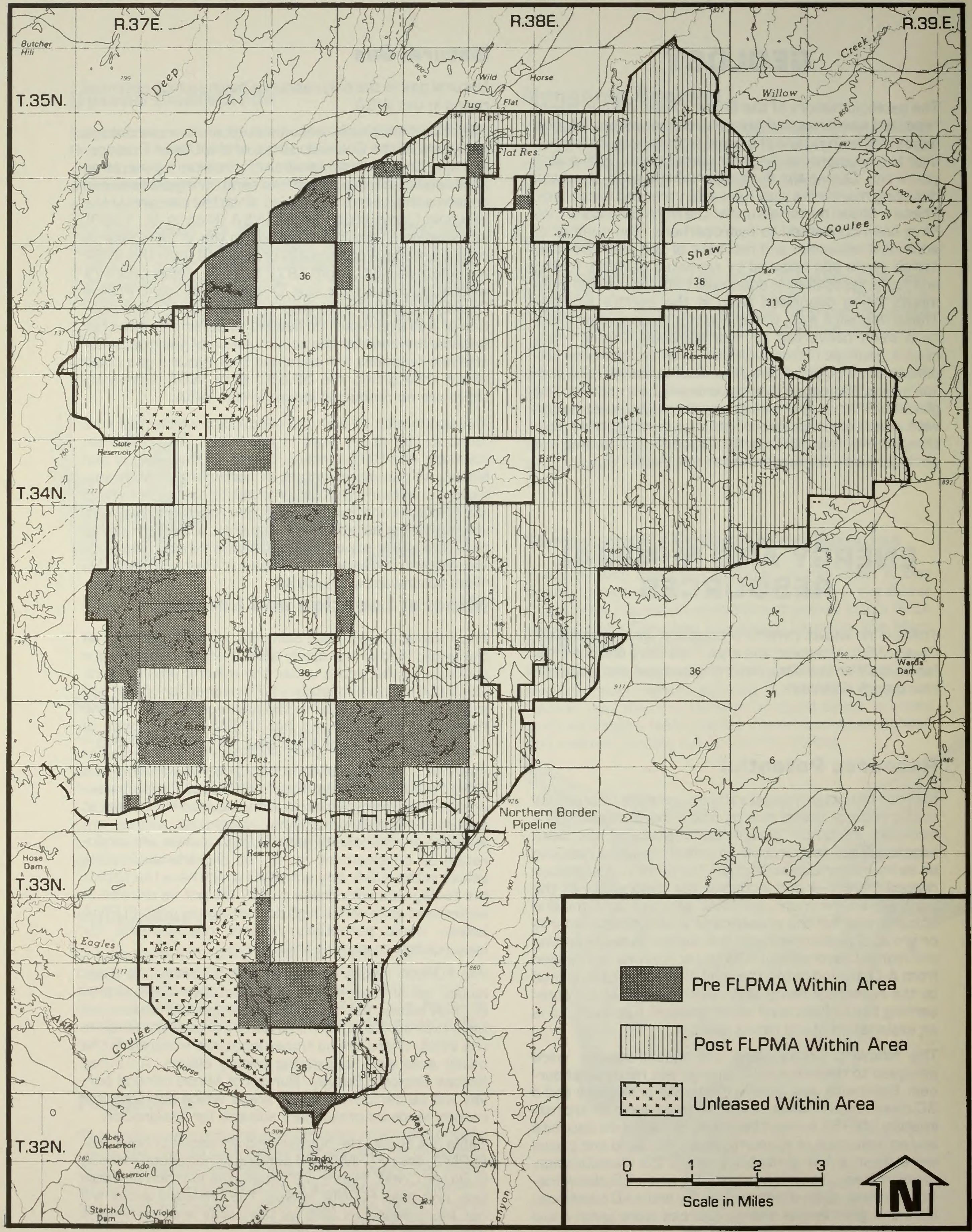


TABLE 3.4:
Bitter Creek Oil and Gas Lease Status

Oil, Gas Leases	
PRE-FLPMA	
Number of Leases in WSA	16
Total Area of Leases (Acres)	17,795
Area of Leases in WSA	7,620
% of Leases in WSA	42.8%
% of WSA in Pre-FLPMA Leases	12.8%
KGS Area	N/A
Next to KGS Area	No
POST-FLPMA	
Number of Leases in WSA	54
Total Area of Leases (Acres)	79,305
Area of Leases in WSA	47,080
% of Leases in WSA	59.4%
% of WSA in Post-FLPMA Leases	78.9%
OIL & GAS SIM	
Acres of WSA in OG SIM	0
% of WSA in OG SIM	0
UNLEASED	
Number of Leases	6
Unleased Acreage	4,960
% of WSA Unleased	8.3 %
Area in Competitive Bid Leases	0
% of WSA in Competitive Bid	0

Source: BLM 1983

LAND STATUS AND USE

There will probably be no urban residential, commercial or industrial expansion near the WSA and only a small portion of the study area is suitable for farming.

The State of Montana owns all surface and mineral rights on 1,920 acres within the WSA. State lands are subject to development and access requirements outside Federal jurisdiction. State inholdings are open to mineral and grazing leasing and access to these inholdings would be across public lands. Except for a few stockwatering ponds and vehicle ways, these lands are similar to the surrounding public lands.

There are 1,360 acres of privately-owned land within the study area. Private inholdings are subject to development and reasonable access which would be across public lands. Except for a few stockwatering ponds and vehicle ways, the private inholdings are undeveloped and similar to the surrounding public lands.

Public lands in the WSA total 59,660 acres (none have been surveyed so these figures are approximate). Changes from BLM's Final Decision: Montana Wilderness Inventory—Bitter Creek came from recalculating acreages.

Withdrawals, Easements and Rights-of-Way

There are no withdrawals or easements inside the WSA. A 4½ mile wide utility corridor includes 16,750 acres of the WSA. At present the Northern Border Gas Pipeline is located within this corridor. There are no known additional applications for utility rights-of-way within the corridor.

Table 3.5 shows the number of permanent improvements in the WSA.

Table 3.6 shows the landownership adjacent to the study area boundary. Presently all adjacent lands are used for ranching and farming. Figure 3.3 details land status within and immediately adjacent to the WSA. Where county roads form the boundary of the WSA, they provide guaranteed access to the area. However, access through state or private lands adjacent to the WSA is not guaranteed.

TABLE 3.5:
Permanent Improvements in the WSA

Vehicle Ways	Number	6
	Miles	19.5
Fences	Number	14
	Miles	59.4
Reservoirs	Number	43
Springs	Number	1
Corrals	Number	1
Gas Wells (dry holes)	Number	2

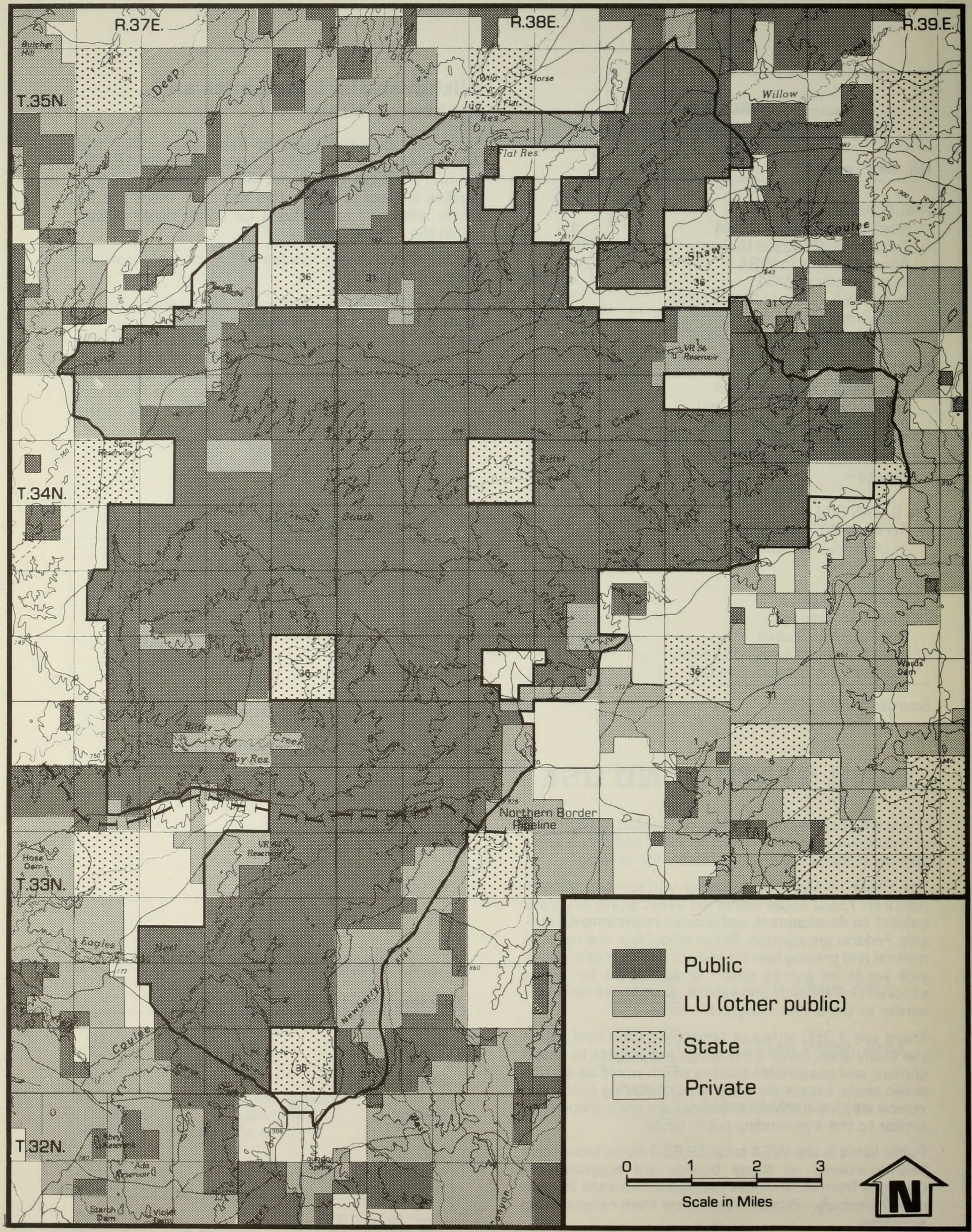
Source: BLM, 1983

TABLE 3.6:
Boundary Ownership in the WSA

Boundary Ownership		
Private	Miles	42.25
	% of Boundary	54.3%
State	Miles	7.50
	% of Boundary	9.7%
Federal	Miles	28.00
	% of Boundary	36.0%
Total	Miles	77.75 100.0%

Source: BLM, 1983

FIGURE 3.3 Land Status — Bitter Creek WSA



SOCIAL CONDITIONS

This section describes social conditions in Valley County and is based on the Draft Missouri Breaks Wilderness Suitability Study Environmental Impact Statement (EIS) (1982).

The Valley County population was 10,250 in 1980, a decreased of 10.6% from 1970. The decrease was primarily due to high out-migration caused by high unemployment. The out-migration rate is less than in the decade between 1960 and 1970 when the county population decreased by 33% due to the closure of the Glasgow Air Force Base. In the future, the population of Valley County is expected to continue to slowly decrease. Glasgow with a 1980 population of 4,455, is the only town with a population above 2,500 in Valley County.

Several sources of information were used in writing the "Local Attitudes and Perceptions" section, including sections of a 1980 survey by ABT Associates, public meetings and letters from interested persons. Much of the discussion specific to this WSA is based on information received from those who took the initiative to make their views known. It is assumed that the attitudes of other area residents would be similar. Nothing is indicated about these concerns becoming reality should the WSA be designated wilderness. The importance of these views is reinforced by an Opinion Research Corporation (ORC) survey completed in 1978. Over 55% of a national sample felt the decision about wilderness should be made by the citizens of the states affected.

Local Attitudes and Perceptions

Residents of Valley County exhibit attitudes and values typical of rural, ranch-oriented societies in the western United States. The rural character of the area is what residents value most about their lifestyle. Specifically, they appreciate the wide open spaces, naturalness, fresh air and solitude. The personal characteristics of other local people (friendliness, independence and industriousness) were frequently mentioned as positive aspects. The residents also valued the lifestyle offered by the local communities: knowing everyone else, the lack of urban problems, relaxed pace and personal freedom. They feel their area is a good place to raise children and, not surprisingly, every respondent wanted to maintain this lifestyle and the traditional land uses of the area.

Many residents feel the biggest threats to their lifestyle are government interference with local ranches, wilderness designation, high taxes, inheritance taxes and diverting the use of public lands to wildlife or recreation. They want the land controlled at the local level and resent interference from outside the area, whether from agencies or special interest groups. Thus, any change in the status quo proposed by BLM would be questioned.

Substantial local interest in the Bitter Creek WSA has been shown by the extremely high attendance at public meetings and the number of letters and petitions received regarding the issues. Local attitudes toward designation appear overwhelmingly negative. Concerns regarding designation cover a wide variety of issues which are discussed in the Scoping section of Chapter 5.

State Attitudes

The results of a recent Statewide poll (Keegan, Lenihan, Polzin and Wallwork, 1982) indicate that Montanans overwhelmingly approve of the concept of setting aside certain public and state lands as designated wilderness areas. They like the idea of preserving an area from development so that it will be available to future generations. There appears to be widespread support for wilderness areas among all kinds of Montanans. Regardless of age, sex, political preference or place of residence, more than 75% of the respondents said they favored wilderness areas. Even among nonusers, 84% supported designated wilderness areas. About 40% of the Montanans surveyed favored the addition of more wilderness areas in the United States. However, only 25% said that Montana needs more wilderness areas. There were no major differences in opinions concerning wilderness between those living in eastern Montana and those in western Montana, where most of the State's wilderness areas are located.

National Attitudes

National opinion surveys indicate the United States population is divided on the subject of wilderness. In 1977, a study conducted by Opinion Research Corporation showed 7% of the population thought there was too much wilderness, 32% too little wilderness and 46% thought the amount was about right. Those favoring more wilderness said it is needed for recreation; too much land is being lost to business or industry and wildlife needs more space. Those favoring no additional wilderness felt the land could be better used for buildings, farming and a growing population. In another survey by ORC (1978), Americans rated wilderness fifth (after clean air, clean water, oil and natural gas) as basic resources in short supply. In a 1979 survey conducted by Cambridge Reports, 39% of the U.S. population felt there was already enough wilderness, while 37% indicated the need for more wilderness (the remaining 23% did not express a preference). The results of these surveys vary because of the changing political and economic climate in the United States and because the questions were phrased differently in each survey. It appears that about 33% to 50% of the population feels there are currently enough wilderness areas while a similar proportion feels there is a shortage.

Social Well-Being

Indicators of social well-being for Valley County show the positive and negative factors associated with living in a remote rural area (see Draft Missouri Breaks Wilderness Suitability Study/EIS, 1982). Negative factors include a higher number of people per physician, a higher proportion of housing without plumbing for exclusive use and lower per capita income. The positive factors include lower divorce and crime rates and stability in the number of ranches. Information from local residents (see the Local Attitudes and Perceptions section) indicates they feel their area offers a high level of social well-being and the positive aspects of their lifestyle far outweigh the negative.

ECONOMIC CONDITIONS

Ranch Related Economic Conditions

In 1978, there were 738 ranches and farms in Valley County (1978 Census of Agriculture, USDC, Bureau of Census). Currently, six individual ranch operations (less than 1% of the county total) have permits to graze in the WSA. The ranch operations were placed into two categories according to numbers of livestock and the percentage of total animal unit month needs provided by the WSA. The ranches are cow-calf and yearling operations.

The dependency of ranch operations on WSA forage was determined by the percentage of total required forage the WSA provides. Table 3.7 shows size categories and dependencies of these affected ranch operations. Most of the ranches are large livestock operations with a herd size greater than 500. The average number of AUMs in the WSA for these large operations is 1,600, with an average dependency of 12.7%. All the ranches are family owned with a few operations having more than one family associated with the ranch. Livestock sales are the primary source of income, although some operations derive part of their income from cash crops.

TABLE 3.7:
Size Categories and Dependencies of Affected Operations

Size Category (in cow units)	No. of Ranches in Category	Av. No. AUMs in WSA	Average Dependency
1—500	2	400	16.2 %
Greater than 500	4	1,600	12.7 %

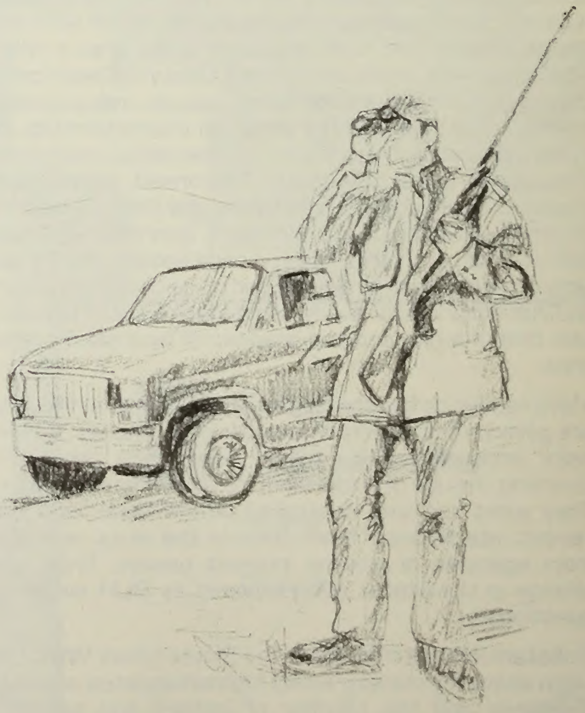
Source: BLM, 1983

Public lands cannot be treated as real property by a permittee. However, the permit does have worth for borrowing money and adding value to the property at the time of sale. These values could be affected by a change in land status, such as wilderness designation. Agricultural Management and Economic Consulting (AMEC) (1982) contacted a variety of people concerning the issue including representatives of the Federal Land Bank Association, the Farmers Home Administration, the Production Credit Association and several insurance company representatives and realtors. The information collected indicates lenders would place a lower value for lending purposes on an operation containing wilderness.

Recreation/Wildlife Related Economic Conditions

Since hunting is the primary recreational activity in the study area, this section will focus on the economic implications of hunting deer and antelope. These economic implications fall into two categories. The first is the value of the hunting experience (i.e., the value the recreationist would be willing to pay). The other category is the amount of dollars expended for hunting (i.e., direct expenditures). Since habitat type would not change significantly within the WSA with any of the alternatives, only the expenditures associated with hunting in the WSA are analyzed and not hunting on other lands even if the WSA supplies the habitat.

It is estimated that hunting expenditures for travel, food, lodging and fees (variable expenditures) average $17 per day for resident and nonresident hunters (1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation). Based on 450 hunter days annually in the WSA, hunting deer and antelope generates about $7,650 annually in direct expenditures in the local economy. This is less than 1% of the total expenditures for hunting for Montana Department of Fish, Wildlife and Parks (MDFWP), Region Six, which includes Bitter Creek. These expenditures represent direct payments to sporting goods stores, motels, service stations and other services. As this $7,650 is circulated, it generates about $14,100 in gross business volume and about $4,300 in salary and wages.



County Employment and Earnings

Figures for 1976 and 1981 show agriculture, services and government to be the main sources of employment in Valley County (see Table 3.8). Total employment decreased during this period with agricultural employment remaining relatively stable while manufacturing, services and government employment decreased substantially. Construction employment increased 292% from 1980 to 1981 with the Northern Border Pipeline project and has declined since then. From 1976 to 1981 the total employment in Montana increased by 12%.

Table 3.8 shows county earnings by source for 1976 and 1981. In 1976, services were the major source of earnings with government and agriculture contributing the next largest portions. In 1981, agriculture was the major source of earnings with services and government contributing the next largest portions (excludes construction earnings). Agricultural earnings varied during the time period from $681,000 to $14,188,000, while services and government earnings were relatively stable. During this same time period, total earnings in Montana increased by 17% (adjusted for inflation).

Although the WSA is considered to have high potential for the occurrence of natural gas (Tetra Tech, Inc., 1983), there are no natural gas fields in the WSA and reservoirs in the area can be expected to be of low pressure and low volume. Natural gas fields in Valley County produced 716,846 million cubic feet (MCF) and 615,049 MCF in 1980 and 1981 respectively. This production contributed less than 2% to the total property tax revenues for Valley County and schools. In 1980 and 1981, less than 20 people were employed in the mining sector, which includes oil and gas extraction. Exploration and development can provide a substantial number of jobs, however, producing fields offer little employment.

TABLE 3.8:
Valley County Employment and Earnings by Source for 1976 and 1981

		Employment		Personal[1] Income ($1,000)	
Item	**1976**	**1981**	**% Change**	**1976**	**1981**
Proprietors					
Farm	779	794	1.9	3,205	4,822
Non-Farm	496	583	17.5	7,842	9,248
Wage and Salary					
Farm	279	273	-2.2	5,091	7,697
Agricultural Services, Forestry, Fisheries & other	29	(D)	—	171	(D)
Mining	0	(D)	—	138	(D)
Construction[2]	214	435	103.0	5,619	25,775
Manufacturing	146	92	-37.0	1,277	1,415
Transportation and Public Utilities	323	315	-2.5	5,160	8,062
Wholesale Trade	176	212	20.5	2,482	3,044
Retail Trade	756	689	-8.9	6,279	7,198
Finance, Insurance, and Real Estate	111	144	29.7	1,400	2,311
Services	1,034	725	-29.9	12,242	11,128
Government	1,011	788	-22.1	9,789	10,916
Total	5,354	5,114	-4.5	49,648	78,388

(D) Not shown to avoid disclosure of confidential information. Data are included in totals.

[1] Wage and salary personal income includes proprietors income.

[2] Construction employment and personal income increased in 1981 with the Northern Border Pipeline project. This project has been completed.

Source: Bureau of Economic Analysis, U.S. Department of Commerce, Regional Economic Information System, 1983.

WILDERNESS

Wilderness Diversity (Ecotype/Landform)

The Bitter Creek WSA is in the Great Plains Shortgrass Prairie Ecoregion (3110) (subgroup grama/needlegrass/wheatgrass—057) according to the Bailey-Kuchler System (see Glossary). This is a broad based classification system that does not evaluate site specific vegetation types. Although Bitter Creek falls in the Shortgrass Prairie Ecoregion, it better fits the mixed-grass type classification. UL Bend, a 20,893-acre area managed by the U.S. Fish and Wildlife Service is presently the only representative of the shortgrass prairie ecotype subgroup in the National Wilderness Preservation System (NWPS). Fifteen WSAs in the Charles M. Russell National Wildlife Refuge, totaling 161,480 acres, are also in the 057 subgroup. These study areas have been endorsed by the President and are awaiting Congressional action. Appendix 3.5 lists all state and national representations of the 057 ecoregion subgroup.

If the 15 USFWS wilderness study areas were designated wilderness, the regional target for the 057 ecotype would be more than met. The addition of the BLM WSAs to the NWPS would not be necessary solely to balance ecotype diversity.

As part of the Roadless Area Review Evaluation II, the U.S. Forest Service (USFS) examined all wilderness and wilderness study areas in the United States for ecotype representation. They then assigned regional ecotype targets as a means of balancing ecotype diversity in the NWPS. The highest target would have at least six wilderness areas of a specific ecotype.

None of the USFS units were in subgroup 057, but they did identify one USFWS wilderness (UL Bend) and one USFWS wilderness study area in this ecotype. Actually, there are 14 additional USFWS WSAs in ecotype 057 not indicated by the Forest Service.

Wilderness Opportunities: Proximity to Population Centers

There are no urban population centers within 5 hours driving time (250 miles) of Bitter Creek. The three closest urban areas are Billings and Great Falls, both about 6 hours from Bitter Creek and Bismarck/Mandan, North Dakota, about 8 hours away. Billings and Great Falls are "standard metropolitan statistical areas" (SMSAs), or industrial population concentrations defined by the U.S. Bureau of Census. Billings has a population of 66,798 and a county-wide population of 108,035 people according to the 1980 Census. Great Falls has 56,725 people, with a metropolitan area population of 80,696. Bismarck/Mandan, North Dakota, (which is not a SMSA) has 59,998 inhabitants, and a metropolitan area population of 79,988.

Billings and Great Falls are within 5 driving hours of abundant and diverse wilderness areas. There are 11 areas containing 4,559,142 acres within 250 miles of Billings and 18 areas totaling 8,673,567 acres within 250 miles of Great Falls. These two cities are also near a number of administratively-endorsed wilderness study areas and several other areas not administratively-endorsed but still undergoing study. Billings is within 250 miles of 54 administratively-endorsed wilderness study areas totaling about 3,446,800 acres and 107 other WSAs totaling 2,457,496 acres. There are 68 administratively-endorsed study areas of 4,617,100 acres and 70 other WSAs totaling 1,720,578 acres within 250 miles of Great Falls.

The Bismarck/Mandan metropolitan area has access to far fewer wilderness areas. Bismarck is within 250 miles of seven designated wilderness areas of approximately 121,955 acres, two administratively-endorsed wilderness study areas totaling 24,400 acres and five other wilderness study areas of 72,508 acres.

Montana Statewide Wilderness Summary

Appendix 3.6 describes the status of all designated wilderness and wilderness study areas, by agency, in the State of Montana.

Regional Wilderness Analysis

Montana and North Dakota are combined into a region for purposes of this analysis. Visitors from this region have good access to northeastern Montana and are within reasonable driving distance of this study area. Portions of both of these states are within a 250-mile radius of the WSA. Residents of the states have similar economic and social backgrounds and presumably similar demands for wilderness resources.

In the region there are 19 wilderness areas of 3,471,064 acres, 51 units totaling about 1,872,452 acres of administratively-endorsed wilderness areas and 63 wilderness study areas (1,321,774 acres). Overall, the region has 6,665,290 acres in 133 areas either designated wilderness or with the potential of designation. Table 3.9 shows the distribution of designated and potential wilderness areas by state.

Wilderness Quality Evaluation

Wilderness quality is one of the planning criteria considered before the selection of BLM's proposed action. Wilderness quality is evaluated by considering four items: apparent naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive unconfined recreation and the presence of special features such as outstanding scenery, ecological, geological, educational or historic values. Evaluations of wilderness quality for each roadless segment of the Bitter Creek WSA follow.

TABLE 3.9:
Wilderness Regional Analysis Summary
Approximate Acreage (Number of Areas)

State	BLM	USFS	NPS	USFWS	State Total
Statutory Wilderness (State and Agency)					
Montana	6,000 (1)	3,360,342 (12)	N/A	64,997 (3)	3,431,339 (16)
North Dakota			29,920 (1)	9,805 (2)	39,725 (3)
Total					3,471,064 (19)
Administratively Endorsed (State and Agency)					
Montana	N/A	618,512 (33)	1,084,660 (2)	161,480 (15)	1,864,652 (50)
North Dakota	N/A	7,800 (1)	N/A	N/A	7,800 (1)
Total					1,872,452 (51)
Wilderness Further Study Areas (State and Agency)					
Montana	442,202 (42)	871,927 (20)	7,645 (1)	N/A	1,321,774 (63)
North Dakota	N/A	N/A	N/A		
Total					1,321,774 (63)

Source: BLM, 1983

Bitter Creek South

SIZE

The southern segment consists of approximately 8,605 acres of public land. It forms the southern tip of the Bitter Creek WSA and is bounded by roads on the east, by roads and privately-owned lands on the south and west and by the Northern Border Pipeline and service road on the north.

NATURALNESS

The segment is apparently natural, however, it does contain several manmade developments. This segment contains 8.5 miles of fence, 7 reservoirs, a 2.25 mile vehicle trail and a stock corral (see Table 3.10). The fence runs from the southwest corner of the subunit to the north and includes a fence segment which runs to the western border. It is a wood and steel-post, 4-wire fence and creates little visual impact beyond its immediate vicinity. The vehicle trail parallels the eastern edge of the segment and is used by hunters for access and by the livestock permittee to check his cows. Its overall adverse impact on naturalness is minimal. Two reservoirs and the corral are immediately adjacent to the boundary roads. Therefore, although they are apparent from the road, they are unnoticeable from most of the interior of the segment. The other reservoirs are well screened by their locations and small size.

The vegetation in this segment appears natural and falls into one of three vegetation/landform types. The first type, the core area badlands, typified by sparse prairie grasses and forbs, also contains blowouts of exposed sand fringed on the south sides with creeping juniper. The second type includes the rims which border the segment on the south and east, predominantly vegetated by creeping juniper, buffaloberry and shrubs. Between the bordering roads and the rim is mixed grass prairie, which characterizes the third vegetation/landform type.

SOLITUDE

This segment does not offer broad opportunites for outstanding solitude. It contains approximately 8,605 acres of public land and a state inholding of 640 acres for a total of 9,245 acres. The core-to-perimeter distance is approximately 1½ miles and it is 4½ miles across at the widest point.

The southern segment is an expansive bowl with one major drainage, Eagles Nest Coulee, and several side drainages radiating from the 200-foot higher rimlands to the east. There is a feeling of solitude inside the bowl but this is limited by both the absence of vegetative screening and by the lack of deep drainages to shelter one visiting party from another. The resulting openness means that inside this segment one visitor can see another up to 2 miles away.

TABLE 3.10: Manmade Features in Bitter Creek South

Feature Reservoir	Legal Description	Location	Approximate Length/area	Remarks
1.	T. 33 N., R. 37 E., Sec. 27	Southwest Edge		Adjacent to boundary road
2.	T. 33 N., R. 37 E., Sec. 23	Northwest Edge		Unvegetated berm located in shallow drainage, willows growing on dam
3.	T. 33 N., R. 37 E., Sec. 13	Northern Side		Larger reservoir
4.	T. 33 N., R. 37 E., Sec. 13	Northern Side		Small, well-hidden reservoir
5.	T. 33 N., R. 38 E., Sec. 19	Eastern Edge		Located next to corral along border road, obvious manmade structure
6.	T. 33 N., R. 35 E., Sec. 31	Southeastern Edge		Dam is visible from boundary road at one point
7.	T. 33 N., R. 37 E., Sec. 26	Southwestern Side		Pit dam in bottom of drainage not evident
Vehicle Way				
1	T. 33 N., R. 38 E., Secs. 17,19,30,31	East Side	4.25 miles	Hunting access and permittee monitoring trail
Fence				
1	T. 33 N., R. 38 E., Secs. 12,13,22, 23,24,26,35	Branches unit north-south	8.5 miles	Wood and steel post fence which splits unit. Little impact.
Corral				
1	T. 33 N., R. 38 E., Sec. 19	East Side	1 ac.	Adjacent to road. Made of wood posts

PRIMITIVE RECREATION

The segment does not offer outstanding opportunities for primitive recreation. The potential recreational activities include hunting, horseback riding, wildlife viewing, photography, camping and hiking. However, none of these would represent a challenging or exceptional recreational opportunity and in many cases would be actively disagreeable.

Probably the biggest recreational challenge is provided by the weather. In wet conditions, the access roads would be impassable. Visitors in the area during soaking rainstorms would find foot travel extremely difficult. In winter, snow covers the lower sections but is blown off any windward areas and from exposed heights. This would make cross-country skiing and other winter activities very difficult. Summer temperatures are often over 100°F. The high heat along with the lack of cover, insects and the presence of rattlesnakes would make summertime activities less than pleasant.

SPECIAL FEATURES

The segment contains signs of early inhabitant's presence, including scattered tipi rings and lithic scatters.

The entire segment has an interesting geologic history. In late Pleistocene geologic times, a crack in the covering glacier ice, appeared through which melt-off water could flow. This crack in the ice was the reason for the advanced erosion which typifies this segment in contrast to the surrounding landform. The thin covering till rapidly eroded with the flow of melt water, exposing the Bearpaw shales to mass wasting and developing deep drainage channels.

The "blowout" areas in the center of the segment and bordering the pipeline crossing are a function of this geologic process. These were formed by a greater amount of glacial till being deposited on south facing slopes than on north slopes. A mixture of wind and water eroded the thin till and now erodes the underlying shales. Creeping juniper and forbs protected the resultant sand/shale "waves" from further encroachment, leaving the typical "blowout" scenery.

Bitter Creek West

SIZE

The western segment consists of approximately 11,105 acres of public land. It forms the western edge of the WSA and is bounded by roads on the north and east, on the west primarily by private lands and on the south by the Northern Border Pipeline Corridor.

NATURALNESS

The majority of this segment appears natural. However, it does contain several manmade developments including 7 miles of fence, 5.25 miles of vehicle trail and 11 reservoirs (see Table 3.11). The wood and metal 4-wire fence splits the segment horizontally before joining the southwest side of the segment. Any adverse visual impact is localized. The reservoirs are grouped to the north and south of the segment. All of the reservoirs are either well hidden, dry or appear to be naturally occurring prairie potholes. The major vehicle trail segments follow the fenceline. The vehicle trails are primitive and difficult to follow and create a minimal visual impact. The overall adverse influence of these range improvements is low.

TABLE 3.11:
Manmade Features in Bitter Creek West

Feature	Legal Description	Location	Approximate Length	Remarks
1	T. 34 N., R. 37, E., Sec. 35	Southeast Side		Small pit in drainage bottom; older, rocked dam.
2	T. 34 N., R. 37 E., Sec. 37	Southeast Edge		Natural appearing small reservoir.
3	T. 34 N., R. 37 E., Sec. 34	West Side		Natural appearing revegetated dam.
4	T. 34 N., R. 37 E., Sec. 26	Center		Small dam in bottom of small drainage.
5	T. 34 N., R. 37 E., Sec. 24	Eastern Edge		Well-hidden, small reservoir.
6	T. 34 N., R. 37 E., Sec. 13	Northeastern side		Well-hidden, small reservoir.
7	T. 34 N., R. 37 E., Sec. 15	Northern Side		Rectangular pit-type dam with low impact.
8	T. 34 N., R. 37 E., Sec. 11	Northern Edge		Natural appearing reservoir, visible from boundary road.
9	T. 34 N., R. 37 E., Sec. 11	Northern Edge		Small reservoir located in drainage bottom.
10	T. 34 N., R. 37 E., Sec. 14	Northern Side		Natural contoured dam, site specific impact.
11	T. 34 N., R. 37 E., Sec. 1	Northeastern Edge		Small reservoir directly adjacent to boundary road.
Vehicle Ways				
1	T. 34 N., R. 37 E., Secs. 25,26,35	Center	2 mi.	Fence access trail.
2	T. 34 N., R. 37 E., Secs. 26,27,33,34,35	Center	3.25 mi.	Fence access trail.
Fence				
1.	T. 34 N., R. 37 E., Secs. 25,26,27 T. 33 N., R. 37 E., Secs. 3,4	Center and western side	7 mi.	Wood and metal post fence in several inter-connected segments.

SOLITUDE

The segment does not offer broad based outstanding opportunities for solitude, other than in isolated pockets. The western section contains 11,105 acres of public land and one state inholding of 640 acres for a total of 11,745 acres. The core to perimeter minimum distance is 2 miles east-to-west and 3 miles north-to-south. The segment is 4 miles across at its widest point.

The western segment appears open and undulating. It is more deeply dissected on the western edge as the South Fork of Bitter Creek, which splits the segment horizontally, drops into Willow Creek. The lack of vegetative or topographic screening detracts from solitude values.

There are only minimal interior or exterior reminders of man's presence in the unit. However, any human activities inside or near the segment would detract from the solitude opportunities due to the lack of any screening.

PRIMITIVE RECREATION

This segment does not offer outstanding opportunities for primitive and unconfined recreation. What opportunities there are for primitive recreation and challenges are the same as those described for Bitter Creek South.

SPECIAL FEATURES

Evidence of early Indian campsites with firepits and lithic scatters exist in this segment.

The geologic history of this portion is the same as that described for Bitter Creek South.

Bitter Creek East

SIZE

The eastern segment consists of approximately 39,950 acres of public land. This portion is the core of the unit and is bounded by roads and private land to the east, west and north and by Northern Border Pipeline Corridor to the south.

NATURALNESS

The majority of the eastern section appears natural. However, a number of range developments in several areas impair naturalness. This segment contains 25 reservoirs, 44 miles of fence, a developed spring and 12.5 miles of unmaintained vehicle trail. The majority of these developments occur above T. 34 N. (see Table 3.12).

The larger reservoirs which contain waterfowl nesting islands such as Flat Reservoir (T. 35 N., R. 38 E., Sec. 21), Jug Reservoir (T. 35 N., R. 38 E., Sec. 21), and Hardrock Reservoir (T. 34 N., R. 38 E., Sec. 4) show some signs of recent earthmoving but are revegetating and create little additional impact beyond the sight specific impact of the reservoirs themselves.

The spring development is hidden in a shrub coulee and is accessed by a grassy, little used vehicle trail. Unless directly adjacent to the spring, visitors would not be aware of its existence.

The fences are a mixture of wood and metal post designs which generally are not silhouetted against the sky and therefore tend to blend in with the overall scenery.

Vehicle trails traverse the northern and southern portions of the segment. These are simply compression tracks created by vehicle passage and are generally used so little that grass and forbs cover them up. In autumn, hunter traffic makes these trails somewhat more visible. Their overall adverse influence on natural values is negligible.

Three vegetation/landform types are present in the segment. The first type, located between the eastern boundary road and the rims which overlook the segment, is mixed grass prairie. The rims themselves are characterized by quaking aspen and shrubs and comprise the second type. The core of the segment is a badlands type landscape, with open shale slopes, scattered grasses and some "blowout" areas on the north side. Overall it appears that natural processes are at work to produce and maintain the present landscape.

SOLITUDE

The eastern segment does offer outstanding opportunities for solitude. It contains approximately 39,950 acres of public land, a state inholding amounting to 640 acres and 1,360 acres of private land for a total of 41,950 acres inside the boundaries. The segment includes portions of two major drainages, the South Fork of Bitter Creek and the East Fork of Willow Creek. Both drainages appear as broad sparsely vegetated bowls 1/4 to 1/2 mile in width, and are separated by a low ridgeline in T. 34 N.

The feeling of solitude one gets in the main drainage bottoms is fragile at best because it comes from an absence of people, at that moment, rather than the topography. Vegetative screening is limited to small aspen groves on the "rims." However, the segments' sheer size permits a number of visitors to be present in the area at the same time without undue affect on solitude.

PRIMITIVE RECREATION

The segment does not offer outstanding opportunities for primitive recreation. Recreational activities include hunting, horseback riding, wildlife photography, camping and hiking. Challenges and hazards are the same as those detailed for the Bitter Creek South.

SPECIAL FEATURES

Tipi rings and lithic scatters attest to early settlement of this portion of the WSA by Indians.

The geologic history and ecological values of this portion of the WSA are the same as those described for the Bitter Creek South.

TABLE 3.12:
Manmade Features in Bitter Creek East

Feature	Legal Description	Location	Approximate Length	Remarks
1	T. 33 N., R. 38 E., Sec. 4	Southeastern Side		Reservoir at head of drainage, re-vegetated
2	T. 33 N., R. 37 E., Sec. 1	Southwestern Side		Located on bottom of side drainage
3	T. 33 N., R. 37 E., Sec. 2	Southwestern Edge		Very noticeable large reservoir with fishery
4	T. 34 N., R. 38 E., Sec. 32	South Side		Low impact, small reservoir
5	T. 34 N., R. 38 E., Sec. 7	Northwestern Side		Small, well-screened reservoir
6	T. 34 N., R. 38 E., Sec. 8	Northwestern Side		Located in bottom of small drainage
7	T. 34 N., R. 38 E., Sec. 5	North Side		Dry, totally revegetated reservoir
8	T. 34 N., R. 38 E., Sec. 4	North Side		Larger reservoir with goose islands; very visible from ridgeline to the south
9	T. 34 N., R. 38 E., Sec. 4	North Side		Large reservoir with goose islands; adversely impacted from ridgeline to the south
10	T. 34 N., R. 38 E., Sec. 2	North Side		Small, natural appearing reservoir
11	T. 34 N., R. 38 E., Sec. 11	North Side		Small, well-vegetated reservoir
12	T. 34 N., R. 38 E., Sec. 1	Northeastern Side		Older, larger reservoir; well vegetated and has a rocked dam
13	T. 34 N., R. 39 E., Sec. 6	Northeastern Edge		Pit-type resevoir; easily noticeable from boundary road
14	T. 34 N., R. 39 E., Sec. 7	Northeastern Side		Fairly large reservoir visible from boundary road
15	T. 34 N., R. 38 E., Sec. 12	Northeastern Side		Large earth dam which is visible from the boundary road
16	T. 35 N., R. 37 E., Sec. 35	Northwestern Edge		Newly rebuilt under IMP stipulations, earth scar is presently obvious
17	T. 35 N., R. 37 E., Sec. 25	Northwestern Edge		Located in a minor drainage, very little impact
18	T. 35 N., R. 38 E., Sec. 23	Northeastern Edge		Small pit dam containing goose island, located on flat, open portion of the WSA
19	T. 35 N., R. 38 E., Sec. 22	Northern Edge		Located at head of open drainage and contains goose islands
20	T. 35 N., R. 38 E., Sec. 21	Northern Edge		Recently rebuilt small dam containing goose islands, located on flat, grassy plain
21	T. 35 N., R. 38 E., Sec. 21	Northern Edge		Recently repaired irregular reservoir containing goose islands, located in open drainage
22	T. 35 N., R. 38 E., Sec. 33	Northern Side		Willows grow on the dam of this small reservoir
23	T. 35 N., R. 38 E., Sec. 31	Northern Side		Recently repaired pit-type reservoir containing goose islands, located on flat prairie area
24	T. 35 N., R. 38 E., Sec. 30	Northern Side		Small dam with only minor site-specific impact
25	T. 35 N., R. 38 E., Sec. 30	Northern Edge		Located near the boundary road and visible from area accessed road. Revegetated

TABLE 3.12:
Manmade Features in Bitter Creek East

Feature	Legal Description	Location	Approximate Length	Remarks
Spring Developments				
1	T. 34 N., R. 38 E., Sec. 34	Southeastern Edge		Development hidden by aspen grove; serviced by grassy constructed trail
Vehicle Ways				
1	T. 34 N., R. 38 E., Secs. 30,31,32	Southern Edge	4.25 mi	Old, well worn trail across bottom portion of WSA
2	T. 34 N., R. 38 E., Secs. 4,5,6	Center of Unit	3.25 mi	Branches in Sec. 6, both halves dead end
3	T. 34 N., R. 39 E., Secs. 5,6,7,12 T. 35 N., R. 39 E., Sec. 31	Eastern Side	3 mi	Minimal trail which accesses 3 reservoirs
4	T. 35 N., R. 38 E., Secs. 21,22,28,33	Northern Side	2 mi	On both PD and private land, accesses 3 reservoirs
Fences				
1	T. 34 N., R. 37 E., Secs. 1,2,3,4 T. 35 N., R. 38 E., Secs. 19, 20, 29, 30, 31, 32	Northern Side	8 mi	Metal post, 4-wire fence, minor impact
2	T. 35 N., R. 38 E., Secs. 32,33 T. 34 N., R. 38 E., Secs. 1, 2, 3 T. 35 N., R. 39 E., Sec. 31	Northern Side	5.75 mi	Metal post, 3-wire fence, minor impact
3	T. 35 N., R. 38 E., Secs. 23,27,28,29,32	Northern Side	4 mi	Wood and metal posts, 4-wire fence, minor impact
4	T. 34 N., R. 38 E., Secs. 13,14,15,16,17,18 T. 34 N., R. 39 E., Sec. 18	Center of Unit	7 mi	Metal posts, 4-wire fence, low impact
5	T. 34 N., R. 38 E., Sec. 1 T. 34 N., R. 39 E., Sec. 36	Eastern Edge	2.5 mi	Metal posts, 4-wire fence, low impact
6	T. 33 N., R. 37 E., Secs. 1,12 T. 34 N., R. 38 E., Secs. 7, 18, 19, 30, 36	Western Edge	8.25 mi	Wood and metal posts, 4-wire fence, minor impact
7	T. 33 N., R. 38 E., Secs. 4,7,8,9	Southern Edge	3.5 mi	Wood and metal posts, 4-wire fence, minor impact
8	T. 34 N., R. 37 E., Sec. 9	Western Edge	1 mi	Metal post, 4-wire fence, low impact
9	T. 35 N., R. 38 E., Secs. 4,8,17,18,19	Eastern Edge	4 mi	Metal posts, 4-wire fence, low impact

IMPACT ANALYSIS

INTRODUCTION

Wilderness designation would not create an irretrievable or irreversible commitment of any multiple use resource within the wilderness study area (WSA). Wilderness would restrict or stop the development of certain natural resources in order to maintain the WSA's natural character. If in the future, Congress feels resources present in the wilderness must be developed in the national interest, they can modify the law to allow it.

The long-term impacts and commitments of the multiple use resources for the all or partial wilderness alternatives are based on the Department of the Interior, Bureau of Land Management (BLM), Wilderness Management Policy (WMP). The Montana State BLM Director has further defined certain parts of the policy. The short-term impacts and long-term commitments of the multiple use resources are based on current BLM management framework plan (MFP) guidance. There would be no impact to cultural resources, fisheries or threatened and endangered species under any of the alternatives.

Based on the evaluation of minerals, there is a high potential for the occurrence of natural gas in Bitter Creek. Potential losses in terms of acres of pre- and post-Federal Land Policy Management Act (FLPMA) leases which would not be developed in the worst case analysis are discussed by alternative.

Bentonite was rated as having moderate potential for occurrence (Tetra Tech) but no reserves have been identified and there is no expected impact from wilderness designation. All other minerals have low potential for occurrence and will not be discussed by alternative.

Economic impact analysis is primarily associated with the ranch operations with grazing permits in Bitter Creek. The analysis follows the procedure identified by Leroy Tuft, Agriculture Management and Economic Consulting (AMEC), (1982). The impacts identified include restrictions on vehicle use to check cows and repair fences, restrictions on range development and the effect on ranch loan and sale values. The possible additional dollar costs to the operators as a result of vehicle way closures would vary widely depending on use normally made of ways and the number of operators involved.

A worst case analysis of additional cost to operators from restrictions on vehicle use is shown in the Ranch Related Economic Impacts section for each WSA alternative. These costs are based on the total miles of vehicle ways and fence in the unit as shown on Table 3.5. In several parts of the WSA the most effective way to observe and manage livestock would be by horseback. The worse case situation would be modified significantly in those cases. Appendix 4.1 describes the methodology used to access ranch related economic impacts.

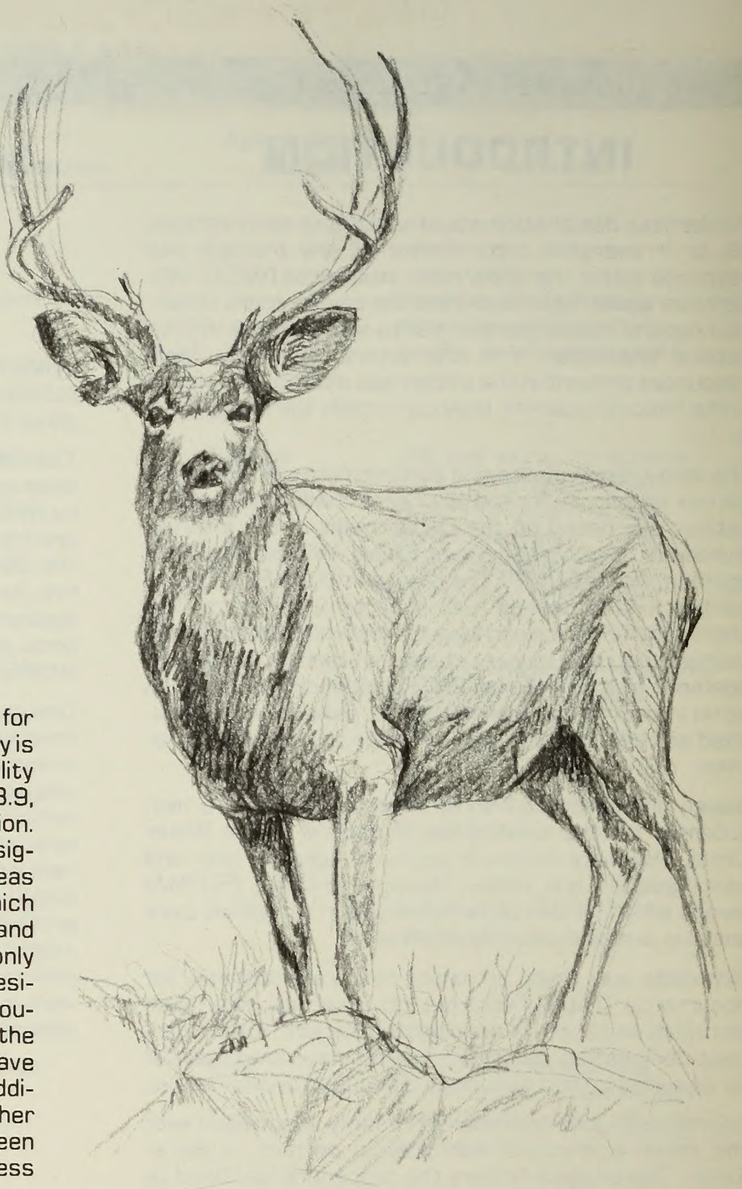
None of the alternatives would affect grazing or other resources enough to significantly impact county employment or earnings.

MULTIPLE RESOURCE BENEFITS FROM WILDERNESS DESIGNATION

Wilderness designation could aid in the long-term maintenance of important mule deer, antelope and upland game bird habitat.

The mere designation of a block of land as wilderness does not automatically infer either benefit or detriment to wildlife. A large block of land without vehicle access provides a secure area for wildlife. On the other hand, the lack of vehicle access to a large block of land often results in the loss of game harvest as a wildlife management tool. Any potential wildlife population increases because of blocking large tracts of land are discussed by alternative.

Designation would also protect native vegetation through restricting mechanical land treatments or the introduction of non-native plants. Restricting vehicle use would protect those cultural artifacts that could be removed by vehicle and would reduce stress on some species of wildlife. Wilderness would ensure the maintenance of scenic values by requiring that all new projects blend into the natural landscape. Watersheds would be protected by the careful placement of water developments and surface disturbances. All types of wilderness compatible non-motorized recreation including hiking, walk-in hunting, fishing, and sightseeing would be enhanced.



WILDERNESS OPPORTUNITIES

The need for additional wilderness opportunities for urban dwellers within 5 hours driving time of the study is not a significant consideration in their overall suitability for wilderness designation. As summarized in Table 3.9, abundant wilderness is available in the two state region. The Missouri River Breaks area presently has 1 designated wilderness (UL Bend) and 15 other study areas administered by the U.S. Fish and Wildlife Service which have been administratively-endorsed for wilderness and are awaiting Congressional action. There has been only minimal support for additional wilderness by local residents in central and eastern Montana based on thousands of letters and comments received since the inventory began in 1978. The local groups that have been most verbal have come out strongly against additional wilderness in the area including Glasgow and other small towns within 50 miles of Glasgow. There has been very limited support from state and national wilderness advocacy groups for the designation of Bitter Creek.

ECOSYSTEM REPRESENTATION

The WSA is classified as a grama-wheatgrass-needlegrass ecotype. There is currently only one representative in the National Wild Preservation System (NWPS) of this ecotype. There are however, 15 other WSAs containing this ecotype located in the Charles M. Russell National Wildlife Refuge (CMR) which have been administratively-endorsed for wilderness and are awaiting Congressional action. The addition of Bitter Creek to the NWPS would be an advantage to balancing the diversity of the national system, but because of the number of other units pending designation, it would not be a major consideration affecting the suitability of the WSA.

IMPACT ANALYSIS BY ALTERNATIVE

No Wilderness (Proposed Action)

RECREATIONAL USE

The WSA is presently open to motorized vehicles utilized by recreationists involved in a variety of leisure activities and this alternative could impact an estimated 2,000 additional acres compatible to new vehicle access, primarily for hunting use. The largest number of people would use Bitter Creek for recreation if it is not designated wilderness. The recreation statistics below are the professional judgment of BLM recreation planners of present visitation levels.

No Wilderness (Proposed Action)

	Present Use	No Wilderness (Proposed Action)	Change
Hunter Days	450	450	0
Non-Hunter Days	145	145	0
Elderly/ Handicapped Visits	5	5	0
Additional Monitoring Costs	0	0	0

Conclusion This alternative would not affect the numbers or mode of travel of area visitors

WILDLIFE POPULATION AND HABITAT

Wilderness benefits to wildlife would be foregone. Wildlife would not receive a secure area since the present relatively high incidence of off-road vehicle travel would continue.

Big game harvest could be applied uniformly to the area as access would allow hunters to reach the interior of the unit. There would be no change in the probability of reaching harvest quotas and managing big game populations at existing levels.

Wildlife habitat development and range improvement projects could proceed within the unit. The possible developments include up to 20 new waterfowl nesting islands and 4 reservoir fencing projects. Their construction would primarily benefit nesting habitat.

Conclusion: Wildlife populations would not increase significantly, however, nesting habitat could benefit from 20 additional nesting islands.

GRAZING MANAGEMENT

There would be no impact to livestock grazing. Multiple use management would continue as prescribed in the Valley MFP and Prairie Potholes Vegetation Allocation Environmental Impact Statement (EIS).

Vegetation production would increase up to 373 animal unit months (AUMs) on the 2,310 acres proposed for chiseling. Other proposed projects such as 4 new reservoirs, 2.5 miles of fence and a 2 mile water pipeline with 2 or 3 stock tanks would improve livestock distribution and decrease the overutilization of areas where water is presently available.

MINERALS (NATURAL GAS)

There would be no potential development of mineral resources foregone with this alternative.

ECONOMIC IMPACTS

There would be no quantifiable ranch, recreational or wildlife related economic benefits foregone with the proposed action. Up to $6,700 of livestock sales (see Glossary) income could be generated by additional AUMs from range improvements. However, vicarious values or knowing that the wilderness area exists and the value of the wilderness experience would be foregone.

WILDERNESS

Selection of the No Wilderness Alternative would give no special legislative protection to natural values on 59,660 acres. The short-term impact would be negligible, since little development activity is anticipated in the near future whether or not the area is designated wilderness.

In the long term, wilderness values in the WSA are expected to suffer some adverse impacts. Chiseling has been proposed for 2,310 acres and would occur if the WSA is not designated wilderness. This would reduce the natural appearance of the treated acres. Due to the popularity of Bitter Creek for deer hunting, and the flatness and easy access from the boundary roads of much of the WSA, it is likely that additional casual, primitive vehicle trails would develop in the future. Although it is impossible to say exactly how many miles will evolve, it is BLM's professional estimate that up to 2,000 acres may be compatible to new vehicle ways. Upgraded or new vehicle access roads across the WSA or a change in land use such as farming is a potential impact on 1,920 acres of state-owned land and 1,360 acres of non-Federal land in the WSA. This is most likely on two privately-owned half-sections located in the eastern portion of the segment. If these changes were to occur, the naturalness, solitude opportunities and scenic values of those portions would be permanently degraded or destroyed affecting the overall apparent naturalness of the WSA adjacent to the inholdings.

Approximately 7,620 acres (12.8%) of the WSA are in pre-FLPMA leases. If these leases were explored and developed before they expire, wilderness values would be degraded.

Conclusion: Non-designation of Bitter Creek would result in decreased wilderness values of naturalness, solitude, primitive recreation, scenery and multiple resource benefits on 2,310 acres of chiseled land, 2,000 acres of land adversely affected by development of new recreational vehicle ways and, potentially, of 1,920 acres of state land and 1,360 acres of private land. In addition, wilderness values would potentially be disrupted by oil and gas industry activity on 7,620 pre-FLPMA acres. The remainder of the WSA would retain it's wilderness values with or without wilderness designation.

All Wilderness Alternative

RECREATIONAL USE

Wilderness designation would close 59,660 acres to off-road vehicle (ORV) traffic. This closure would adversely affect hunters, fishermen, sightseers and those visiting ancestral homesteads. Because of their total dependency on vehicles, an estimated five elderly and/or handicapped would be precluded from visiting the interior of the WSA. Non-mechanized methods of entry and visitation by wilderness seekers would replace some of the use resulting from ORV closures, but a drop in visitation would still be expected in the long term. In the short term (2 years after designation) there would likely be a small overall increase in non-hunting visitation.

Due to the open nature of Bitter Creek and the ease of access from bordering roads, wilderness designation without on-the-ground enforcement would not stop ORV travel. Therefore, BLM would need to patrol the area to enforce off-road vehicle restrictions, especially during hunting season. The required personnel and equipment costs would amount to at least the prevailing BLM work month cost for the 5 weeks of deer hunting season plus 1 week of spot monitoring during the rest of the user season. This amounts to approximately $4,200 additional cost to BLM if the area is designated wilderness.

The following projected visitor statistics and estimated additional costs for the All Wilderness Alternative represents the professional estimates of BLM recreation planners.

All Wilderness

	Present Use	Short Term 2 Years After Designation	Long Term Greater Than 2 Years After Designation
Hunter Days	450	200	200
Non-Hunter Days	145	200	125
Elderly/ Handicapped Visits	5	0	0
Additional Monitoring Costs	0	$4,200	$4,200

Conclusion: Wilderness designation in the short term would result in a 56% decrease in hunter use and could preclude use by an estimated five elderly and/or handicapped visits. It would however, result in a 38% increase in non-hunter visits. Annual monitoring costs to the BLM are estimated to be $4,200. In the long term, wilderness designation would result in the similar use as in the short term, but non-hunter visits would decrease by 14% from pre-designation levels.

WILDLIFE POPULATIONS AND HABITAT

Wilderness designation would close six vehicle ways totalling approximately 19.5 miles. These closures, coupled with the prohibition of off-road use in the WSA, would have a significant impact on deer and antelope harvest in the WSA, especially the core area. Local hunters traditionally drive the entire WSA, both on and off vehicular ways, and are accustomed to harvesting their deer and antelope in this fashion. It can be assumed that with this alternative, game management harvest goals would be reached only around the perimeter of the WSA and along any vehicular ways that remain open. With very few exceptions, only trophy animal harvest could be expected within the interior of the WSA due to the large size of this WSA. There would be, essentially, no anterless deer harvest within the core area. Big game populations could increase up to 25%, to approximately 10.0 to 12.5 deer per square mile and about .9 antelope per square mile. This area already supports one of the Valley Resource Area's highest deer densities and carrying capacity problems could occur in the future.

If deer densities exceeded carrying capacity, the area's deer herd would probably become stagnant. The herd's age class structure would start to deteriorate as would its vigor. The trend would be for a higher percentage of older, less productive, less healthy animals. Game management personnel would have to devise harvest incentives to compensate for the lack of hunter access. Commonly used incentives such as more antlerless permits, longer season, etc., would probably not attract a sufficient number of hunters into the WSA to get the desired harvest.

Up to 20 waterfowl nesting islands might be foregone with the alternative. The loss of them would have only a minor impact on the overall resource area waterfowl habitat management program.

Conclusion: Mule deer and antelope populations could increase up to 25% causing some reduction of herd quality. Up to 20 waterfowl nesting islands could be foregone.

GRAZING MANAGEMENT

Wilderness designation would have a moderate to high impact to grazing management, mostly due to the restriction on range developments. New range improvements would not be allowed solely to increase livestock numbers. Any new range improvements or maintenance projects on existing facilities would probably have higher construction, engineering or clearance costs associated with the project. It is difficult to identify any specific cost increase since each project would vary. Also eight out nine of the affected allotments are only partially contained in the WSA. The ranchers could check their livestock with a vehicle in the portion lying outside the WSA boundaries but would have to go on foot or horseback inside the WSA. In many cases this could result in less effective livestock management inside the WSA.

A 373 animal unit month improvement would be foregone by restricting mechanical treatment, chiseling, on approximately 2,310 acres of clubmoss/blue grama sod-bound rangeland in fair or lower range condition. Chiseling would be done on the bench tops of the unit.

The potential loss of the spring development and the 2-mile pipeline with stockwater tanks in the South Fork Bitter Creek allotment would allow the over utilization and trampling of grasses along the benches and scarp to continue. Current utilization levels are heavy to severe (61-80%). If the pipeline and spring development are installed, it is estimated that utilization levels on grasses should decrease 20%, into the moderate to heavy category. Without the spring development and pipeline with stockwater tanks, the opportunity to decrease utilization levels by 20% would be foregone.

Bitter Creek South has 4 reservoirs and 2.5 miles of fence proposed within the Upper Canyon Creek allotment in an area of about 2,000 acres that is apparently natural. The need for those range improvements is to force livestock into an underutilized area and relieve some of the pressure on the rest of the allotment in the unit (see Figure 3.1). The underutilized area is receiving light use (21-40%). It is estimated with the fence and water development, utilization levels should increase 10%. With wilderness designation, utilization levels in the allotment would remain static.

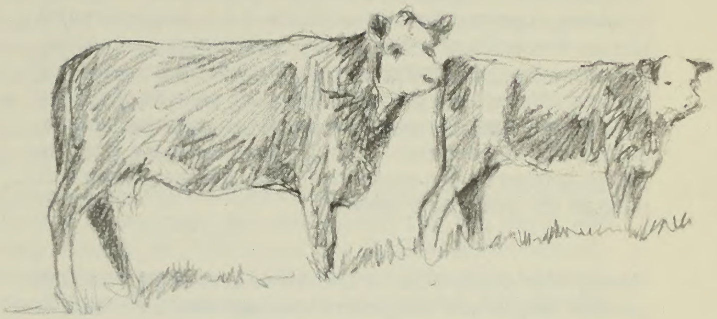
Conclusion: Without the water pipeline in the South Fork Bitter Creek allotment, utilization levels will remain in the heavy-severe category. If the proposed fence and water projects are not developed in the Upper Canyon Creek allotment, overall utilization levels and livestock grazing patterns would remain static.

MINERALS (NATURAL GAS)

The potential for the occurrence of natural gas is rated high. Of the 59,660 acres in this WSA, 7,620 are included in 16 pre-FLPMA leases and 47,080 are included in 54 post-FLPMA leases.

Inherent in the pre-FLPMA leases are existing rights to explore for and develop reserves. In the short term (the life of the lease), there would be no impact upon the minerals industry. In the long term (after pre-FLPMA leases expire), 7,620 acres could be removed from further exploration and development with the exception of leases classified as producing. There would be restrictions on areas and surface disturbances on all post-FLPMA leases in the WSA.

Conclusion: Wilderness designation could preclude further exploration and development in the short and long term on 47,080 acres and 59,660 acres respectively that are rated structurally as high value. Industry could lose the opportunity to explore for and develop natural gas reserves in the area.



RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $530 and about 640 additional hours of labor annually. The potential loss in loan value could be as much as $659,000 (see Appendix 4.2). Six operators have BLM permits to graze within the WSA. These impacts would be split among the various opeators. Restrictions on range improvements, such as water development could affect livestock distribution and inhibit attempts to increase conception rates and subsequently livestock sales.

With restrictions on range improvements, the livestock forage foregone would be 373 animal unit months (AUMs), thus preventing livestock sales from increasing by an estimated $6,900. The loss of potential livestock sales would be less than 1% of Valley County's total livestock sales for 1982.

RECREATION/WILDLIFE RELATED ECONOMIC IMPACTS

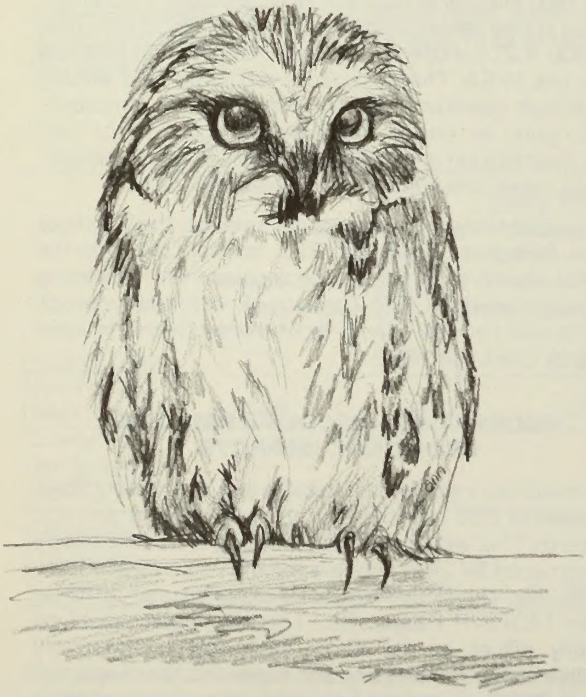
With restrictions on motor vehicle use, there would be a decrease of 250 hunter days annually in the short and long term. This would decrease hunting expenditures by an estimated $4,250 annually for the regional economy which is less than 1% of the total expenditures on hunting for MDFWP Region Six. This decrease would be partially offset in the short term by a temporary increase in non-hunting use and expenditures of approximately $600. Decreased spending would impact local businesses that serve recreationists, however, the regional economy would not be significantly affected.

Conclusion: Wilderness designation could result in increased ranch maintenance expenses of $530 and up to 640 additional hours of labor annually. Livestock sales and hunting expenditures could decrease annually by an estimated $6,900 and $4,250 respectively.

WILDERNESS

Selection of the All Wilderness Alternative would designate as wilderness all 59,660 acres of the Bitter Creek WSA, preserving the WSAs natural qualities and outstanding opportunities for solitude. It would also ensure the continuation of primitive recreational opportunities such as hiking, camping and hunting in isolated natural setting. Wilderness designation would tend to preserve the WSAs special features such as cultural values, scenic attributes such as the "blow out" areas and the aspen groves on the rim of the WSA and would protect habitat for the area's wildlife.

Wilderness designation of the entire area could result in several short and long-term manageability problems. Pre-FLPMA oil and gas leases which encompass 7,620 acres (12.8%) of the area, carry valid existing rights of exploration and development even if the area is designated wilderness. Oil and gas activity within the area would pose a short-term manageability problem on those acres.



Vehicle traffic on the internal dividing roads creates serious manageability conflicts. The location of those roads and their visibility from surrounding areas ensures a diminishment of wilderness values on approximately 2,000 acres along 14 miles of boundary road.

The 1,920 acres of state and 1,360 acres of non-Federal inholdings in six parcels create a potential wilderness manageability problem. The landowner's, or in the case of state-owned lands, the leasee's rights of access and freedom of action within these lands, pose a significant and continuing threat of impairment of wilderness values. These inholdings are distributed throughout the WSA.

The existing valid grazing rights of permittees in the WSA also pose a wilderness manageability issue. Rancher use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values. As there are 43 reservoirs, 59.4 miles of fence, 1 spring and 1 corral, all of which will require maintenance or replacement, there is a long-term probability that wilderness values would be impaired from time to time.

This alternative would entail significant additional monitoring and enforcement costs estimated to be $4,200 per year to ensure compliance with the Wilderness Management Policy. Off-road vehicle use, especially during hunting season, would be difficult to control and non-enforcement would negate the WSAs wilderness designation. This problem is especially acute on the north side where a flat landform and an irregular unmarked boundary increase the chances for vehicle trespass.

Conclusion: Wilderness designation for the entire WSA would preserve wilderness values and maintain scenic, recreational and cultural resources. Manageability conflicts as a result of designation would include potential oil and gas activity on 7,620 acres, continued vehicle traffic on 14 miles of internal segmenting roads adversely affecting solitude approximately 2,000 acres, inside the WSA, state and private land inholdings on 3,280 acres, and grazing permittee maintenance or replacement of 43 reservoirs, 59.4 miles of fence, 1 spring and 1 corral. In addition, wilderness designation would result in $4,200 additional surveillance costs to ensure preservation of wilderness values.

Bitter Creek East Alternative

RECREATIONAL USE

Wilderness designation would close 39,950 acres to ORV traffic. The annual recreational use under this alternative is given below for both the short and long term.

Bitter Creek East Alternative

	Present Use	Short Term 2 Years After Designation	Long Term Greater Than 2 Years After Designation
Hunter Days	450	225	225
Non-Hunter Days	145	200	125
Elderly/ Handicapped Visits	5	2	2
Additional Monitoring Costs	0	$4,200	$4,200

Conclusion: Wilderness designation in the short term would result in a 50% decrease from pre-Designation levels in hunter use and would reduce use by the elderly and/or handicapped by 60%. It would however, also result in a 38% increase in non-hunter visits. Additional monitoring costs to the BLM are estimated to be $4,200. In the long term wilderness designation would result in the same number of hunter visits as in the short term, but non-hunter visits would decrease by 14% from pre-designation levels.

WILDLIFE POPULATIONS AND HABITAT

This alternative would close four vehicle ways totalling approximately 12.5 miles. Since Bitter Creek East encompasses the majority of the Bitter Creek WSA, the Partial Wilderness Alteranative would have essentially the same impacts to wildlife as the All Wilderness Alternative. Up to 11 waterfowl nesting islands could be foregone with this alternative.

GRAZING MANAGEMENT

The Bitter Creek East Alternative would have a low to moderate impact on grazing management. Approximately 168 AUMs would be foregone by restricting, mechanical treatment (chiseling), on approximately 1,000 acres of rangeland. The impact of not developing the spring and the 2 mile pipeline with stockwater tanks would be the same as described in the All Wilderness Alternative.

MINERALS (NATURAL GAS)

The potential for the occurrence of natural gas is rated high. Of the 39,950 acres in this alternative, 3,180 are included in 9 pre-FLPMA leases and 36,770 are included in 39 post-FLPMA leases.

Inherent in the pre-FLPMA leases are existing rights to explore for and develop reserves. In the short term (the life of the lease), there would be no impact upon the minerals industry. In the long term (after pre-FLPMA leases expire), 3,180 acres could be removed from further exploration and development, with the exception of leases classified as producing. There would be restrictions on areas and surface disturbances on all post-FLPMA leases.

Conclusion: Wilderness designation could preclude further exploration and development in the short and long term on 36,770 acres and 39,950 acres respectively that are rated structurally as high value. Industry could lose the opportunity to explore for and develop natural gas reserves in the area.

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $450 and about 460 additional hours of labor annually. The potential loss in loan value could be as much as $421,000 (see Appendix 4.1). Six operators have BLM permits to graze within this segment. These impacts would be split among the various operators. Restrictions on range improvements, such as water development could affect livestock distribution and inhibit attempts to increase conception rates and subsequently livestock sales.

With restrictions on range improvements the forage foregone would be 168 AUMs, thus preventing livestock sales from increasing by an estimated $3,100. The loss of potential livestock sales would be less than 1% of Valley County's total livestock sales for 1982.

RECREATION/WILDLIFE RELATED ECONOMIC IMPACTS

With restrictions on motor vehicle use there would be a decrease of 225 hunter days annually in the short and long term. This would decrease hunting expenditures by an estimated $3,825 annually for the regional economy which is less than 1% of the total expenditures on hunting for MDFWP Region Six. Decreased spending would impact local businesses that serve recreationists, however, the regional economy would not be significantly affected.

Conclusion: Wilderness designation could result in increased ranch maintenance expenses of $450 and up to 460 additional hours of labor annually. Livestock sales and hunting expenditures could decrease annually by an estimated $3,100 and $3,825 respectively.

WILDERNESS

This alternative would provide wilderness protection for 39,950 acres of public land. The benefits to the wilderness resource would be the same as those described in the All Wilderness Alternative.

Manageability conflicts would be generally the same as those described in the All Wilderness Alternative, except on less acreage. Potential conflict with oil and gas industry exploration and development "grandfathered" in pre-FLPMA leases is a possibility on 3,180 acres or 8% of Bitter Creek East.

There would be no manageability conflict from vehicle traffic on the roads that segment Bitter Creek into three roadless areas.

This alternative includes one state-owned section of 640 acres and three parcels of non-Federal land amounting to 1,360 acres inside the segment boundaries. Manageability problems, including the potential development or upgrading of access roads to inholdings and change of land use, would be the same as those described for the All Wilderness Alternative.

Manageability conflicts would potentially result from grazing permittee repair or replacement of 25 reservoirs, 44 miles of fence and 1 spring development.

The monitoring and enforcement costs of designation, $4,200, would be the same as in the All Wilderness Alternative. The Bitter Creek East Alternative includes the irregular and unmarked boundary area on the north side which would make ORV travel regulations extremely difficult to enforce.

Conclusion: Wilderness designation for Bitter Creek East would preserve wilderness values and maintain scenic, recreational and cultural resources. Manageability conflicts as a result of designation would include potential oil and gas activity on 3,180 acres, state and private land inholdings on 1,280 acres, and grazing permittee maintenance or replacement of 25 reservoirs, 44 miles of fence and 1 spring development. Surveillance costs would amount to $4,200, the same as in the All Wilderness Alternative.

Enhanced Wilderness Manageability Alternative

RECREATIONAL USE

This alternative would close 26,000 acres to ORV traffic. The types of changes would be the same as those detailed in the All Wilderness Alternative except on less acreage. The annual recreational use under this alternative is given below for both the short and long term.

Enhanced Wilderness Alternative

	Present Use	Short Term 2 Years After Designation	Long Term Greater Than 2 Years After Designation
Hunter Days	450	300	300
Non-Hunter Days	145	200	125
Elderly/ Handicapped Visits	5	3	3
Additional Monitoring Costs	0	$4,200	$4,200

Conclusion: Wilderness designation in the short term would result in a 33% decrease from pre-designation levels in hunter use and would reduce use by the elderly and/or handicapped by 40%. It would, however, result in the same number of non-hunter visits as estimated in the All Wilderness Alternative. Additional monitoring costs to the BLM are estimated to be $4,200. In the long term, wilderness designation would result in the same number of hunter visits as in the short term, but non-hunter visits would decrease by 14% from pre-designation levels.

WILDLIFE POPULATIONS AND HABITAT

The big game wildlife impacts would be the same as in the All Wilderness Alternative. A total of three vehicle ways would be closed, for a loss of approximately 10.5 miles of access.

The Enhanced Manageability Alternative would have a very low impact on habitat management plan (HMP) waterfowl developments. The development of up to seven waterfowl nesting islands for wildlife habitat improvement would be foregone with this alternative if new access routes were required. The terrain in this alternative is not suitable for intensive waterfowl development.

GRAZING MANAGEMENT

The Enhanced Wilderness Management Alternative would have less impact than the All Wilderness or Bitter Creek East Alternative. The consequences of not developing the spring and the 2-mile pipeline with stockwater tanks is explained in the All Wilderness Alternative.

MINERALS (NATURAL GAS)

The potential for the occurrence of natural gas is rated high. Of the 26,000 acres in this alternative, 1,790 are included in 3 pre-FLPMA leases and 24,210 are included in 25 post-FLPMA leases.

Inherent in the pre-FLPMA leases are existing rights to explore for and develop reserves. In the short term (the life of the lease), there would be no impact upon the minerals industry. In the long term (after pre-FLPMA leases expire), 1,790 acres could be removed from further exploration and development with the exception of leases classified as producing. There would be restrictions on areas and surface disturbances on all post-FLPMA leases.

Conclusion: Wilderness designation could preclude further exploration and development in the short and long term on 24,210 acres and 26,000 acres respectively that are rated structurally as high value. Industry could lose the opportunity to explore for and develop natural gas reserves in the area.

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $360 and about 260 additional hours of labor annually. The potential loss in loan value could be as much as $269,000 (see Appendix 4.2). Five operators have BLM permits to graze on the lands in this segment. These impacts would be split among the various operators. Restrictions on range improvements, such as water development (see Table 3.2), could affect livestock distribution and inhibit attempts to increase conception rates and subsequently livestock sales.

RECREATION/WILDLIFE RELATED ECONOMIC IMPACTS

With restrictions on motor vehicle use there would be a decrease of 150 hunter days annually in the short and long term. This would decrease hunting expenditures by an estimated $2,550 annually for the regional economy which is less than 1% of the total expenditures on hunting for MDFWP Region Six. Decreased spending would impact the local businesses that serve recreationists, however, the regional economy would not be significantly affected.

Conclusion: Wilderness designation could result in increased ranch maintenance expenses of $360 and up to 260 additional hours of labor annually. Hunting expenditures could decrease annually by an estimated $2,550.

WILDERNESS

Selection of the Enhanced Wilderness Alternative would provide wilderness protection for 26,000 acres of public land. The benefits to the wilderness resource would be the same as those described in the All Wilderness Alternative.

Manageability conflicts would be generally the same as those described in the All Wilderness Alternative except on less acreage. Potential conflict with oil and gas industry exploration and development "grandfathered' in pre-FLPMA leases is a possibility on 1,790 acres or 6.8% of the Enhanced Wilderness Alternative.

As in Bitter Creek East, there would be no manageability conflict from vehicle traffic on internal dividing roads as no roads are included in this alternative.

This alternative includes one state-owned section of 640 acres and one parcel of non-Federal land of 320 acres inside the unit boundaries. The other private parcel, included in the Bitter Creek East Alternative is located outside the borders of this alternative. Manageability problems, including the potential development or upgrading of access roads and change of land use, would be the same as described for the All Wilderness Alternative.

Manageability conflicts would potentially result from grazing permittee repair or replacement of 15 reservoirs, 25.25 miles of fence and 1 spring.

The monitoring and enforcement costs of designation, $4,200, would be the same as in the All Wilderness Alternative. The Enhanced Wilderness Alternative does not include the irregular and unmarked boundary area on the north side which would make ORV travel regulation extremely difficult.

Conclusion: Wilderness designation for the Enhanced Wilderness Alternative would preserve wilderness values and maintain scenic, recreational and cultural resources. Manageability conflicts as a result of designation would include potential oil and gas activity on 1,790 acres, state and private land inholdings on 960 acres, and grazing permittee maintenance or replacement of 15 reservoirs, 25.25 miles of fence and 1 spring development. Surveillance costs would amount to $4,200, the same as in the All Wilderness Alternative.

CONSULTATION & COORDINATION

5

SCOPING FOR THE BITTER CREEK WILDERNESS STUDY/EIS

The long history of input from private individuals, organizations and local, county and state governments was considered while selecting the range of alternatives and the key issues analyzed in this draft environmental impact statement (EIS).

The scoping process began early in 1979 and continued in December of 1979 with a public meeting in Glasgow which identified Bitter Creek as a wilderness study area. The Bureau of Land Management (BLM) received approximately 2,000 responses to their meeting in opposition of the study. Many of these letters and verbal comments helped in formulating the issues analyzed in this draft.

In 1980 the Montana Wilderness Inventory Final Decision—Bitter Creek was released and then protested by more than 1,600 individuals and groups who wanted the area removed from wilderness study. The study was then delayed by 28 appeals made to the Interior Board of Land Appeals (IBLA). The IBLA ruled on these appeals in favor of BLM and cleared the way for the study.

On July 29, 1983, a Federal Register notice announced the study and invited all interested parties to comment on issues and possible study alternatives.

At the same time news releases announcing the study and soliciting comments on issues and possible study alternatives appeared in local papers in eastern Montana. Both the Federal Register notice and the news releases announced open houses to be held in Glasgow, Montana on August 10 and 11, 1983.

These news releases were followed by an issue brochure mailed to 2,000 individuals on the Bitter Creek mailing list. This brochure listed the areas of concern identified by the inventory process as well as a possible range of alternatives and requested comments on these issues and alternatives.

The Governor of Montana was briefed on the study and asked to tour the area as part of the public input process. In addition, the Grazing Advisory Board and the Multiple Use Advisory Board of the Lewistown BLM District were briefed on the issues and asked to expand on them if necessary. Both boards were invited to tour the study area. In October, 1983 the Governor's Wilderness Review Committee and both boards toured the study area. While no comment was provided on issues or alternatives by the Governor's Wilderness Review Committee, both advisory boards passed a unanimous resolution supporting a No Wilderness Alternative for the Bitter Creek WSA and reiterated the issues identified in the preliminary brochure.

During the initial round of public involvement in late 1979 and 1980, approximately 50 personalized letters, 1,400 form letters and a petition with 102 signatures were received. Fewer than 10 of these letters supported studying the Bitter Creek area for wilderness designation. The petition and all form letters were against any wilderness designation. Very little interest from people outside the local area was indicated at this time.

During subsequent stages of public involvement in 1983, input was received via individual letters, comments solicited at open houses and a petition. Approximately 400 people (99% from the local area) signed a petition against wilderness designation. Of the 45 letters received, 40 were against designation. Nineteen out-of-area and 10 out-of-state letters were received. Of the out-of-area letters, 5 were in favor of designation and 14 were against. Of the out-of-state letters 4 were in favor of designation and 6 were against. Of the 97 comments received at the open houses, 93 listed problems associated with designation and 4 indicated a positive attitude toward designation. Only two alternatives were offered by the public; the All Wilderness and No Wilderness Alternatives.

There were a number of issues identified during the scoping process. Some are discussed in each alternative. A few comments were identified that were either outside the scope of this study or were concerns that would not be affected by the proposed action or any of the alternatives. Many of the comments indicated concern over whether the area met wilderness criteria. Whether the naturalness of the area has been impaired because of roads, reservoirs and relics from homesteader days is addressed under the Wilderness Values section of Chapter 3. A concern over BLM's use of the generic term "short grass prairie" during the inventory phase of the wilderness review is not addressed by alternative although it appeared in many comments. In scientific fact Bitter Creek contains a mixture of prairie grasses, shrubs, juniper, aspen and cottonwood and is not a true short grass prairie, but is definitely a prairie. The fact that the area is prairie is discussed in the analysis of wilderness values in Chapter 3.

Concerns regarding other wilderness values including outstanding solitude and recreation are discussed in the wilderness resource portion of Chapter 3. Other concerns addressed under Recreational Use Impacts include whether the WSA will provide for and attract wilderness recreationists and the impact of the loss of vehicle use of the WSA. This latter concern was voiced by elderly people who may wish to visit old homesteads as well as hunters who need vehicles to retrieve game. The impacts of changes in the number of hunters are discussed under both the Wildlife Population and Recreational Use Impacts Sections in Chapter 4.

Additional concerns raised by the public include access to inholdings, the expense of wilderness management and the difficulty of discerning boundaries on the ground. These are discussed under Wilderness Impacts in Chapter 4. Concerns regarding impacts to the regional economy and county tax base due to changes in ranch operations and prohibitions on oil and gas development were also mentioned. Impacts of changes in ranch operation costs are discussed in the Economic Impact section. Potential tax losses were not estimated because there are too many unknowns involved.

Other comments focused on the impacts of designation on individual ranching operations. Impacts of changes in policy regarding noxious weed control, predator control, range improvements and vehicle use are discussed under Grazing Management Impacts with financial considerations presented under Ranch Related Economic Impacts. These sections address current policies. However, concern regarding potential policies is also evident and is addressed under the Social Conditions portions of Chapter 3.

Additional general comments included leaving the land in multiple use; even if designation does not occur the land will not change and there is no local support for designation. The first comment is addressed for each resource. The latter comment regarding local attitudes is being addressed in the Social Conditions portion of Chapter 3.

Those individuals who favored designation did so because they believe prairie ecosystems should be represented in the national wilderness system and because the area has historical value because of its homesteading days. They also indicated that the loss of county taxes would not be as great as others have indicated.

Social issues raised during scoping include the perception that wilderness designation would be a genuine threat to the local ranching life style. Even if current policy does not substantially affect operations, there is concern that policies may change in the future as administrations change. For example, many people were convinced that grazing permits would be cut or be eliminated in the future. In addition, residents view this designation as a loss of local automony to determine how their area is managed. Attitudes toward the BLM would be affected by designation, making it harder for the BLM to work with the local community and individual operators. In addition, attitudes toward designation would make enforcement difficult especially given the lack of "on-the-ground" boundaries.

The No Wilderness Alternative is supported overwhelmingly by local people. In addition, there is little evidence of support for designation outside the local area. Problems that would be encountered after designation include actual management of the area and increased attitude problems encountered by BLM in dealing with the local populace. All these were considered by management in selecting the "No Wilderness Alternative" as BLM's proposed action as well as the other alternatives.

The draft EIS was prepared by resource specialists from the BLM's Valley Resource Area Office and the Lewistown District Office with assistance from the Montana State Office. The disciplines and skills used to develop this EIS were: vegetation and range use, animal husbandry, soils, recreation, climate, sociology, economics, printing, public affairs and typing.

COMMENTS REQUESTED

Comments on the Draft EIS have been requested from the following agencies and organizations and individuals too numerous to list.

CONGRESSIONAL OFFICES:

Office of Senator Baucus
Office of Senator Melcher
Office of Congressman Marlenee
Office of Congressman Williams

COUNTY COMMISSIONERS AND PLANNING BOARDS:

Sheridan County
Daniels County
Valley County
Roosevelt County
Phillips County
Blaine County

OTHER ORGANIZATIONS:

Montana Wildlife Federation
Sierra Club
Environmental Information Center
Northern Plains Resource Council
Montana Wilderness Association
Montana-Wyoming Rep. The Wilderness Society
Montana Rep. Defenders of Wildlife
Montana Guides and Outfitters Association
Western Environmental Trade Association
Five Valley Audubon Society
Friends of Earth
Missouri Breaks Multiple Use Association
Montana Wilderness Institute
Montana Stockgrowers
North Central Montana Stockgrowers Association
Montana Public Lands Council

STATE AGENCIES AND ORGANIZATIONS:

Montana Department of Agriculture
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of Revenue
Montana State Historic Preservation Officer
Office of the Governor

FEDERAL AGENCIES:

Council on Environmental Quality
Department of Agriculture
Forest Service
Soil Conservation Service
Department of the Air Force
Department of the Army Corps of Engineers
Department of Energy
Federal Energy Regulatory Commission
Department of the Interior
Bureau of Mines
Bureau of Reclamation
Fish and Wildlife Service
Geological Survey
Environmental Protection Agency

CONSISTENCY WITH OTHER PLANS

The Federal Land Policy and Management Act requires that BLM plans be as consistent as possible with other agency plans, while considering Federal laws, policies and regulations.

Other Federal agency, city, county and state plans in the EIS area were considered in the preparation of this document.

STATE OF MONTANA

A recently signed Memorandum of Understanding among the BLM, the Forest Service and the Governor created the Natural Resources Council. This council will serve as a clearing house for consultation on all natural resource issues. This group will study the recommendations of this report for consistency.

CITY-COUNTY PLANS

No specific conflict with this wilderness study has been identified in any city or county plans.

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BA Economics, University of Montana; MA Outdoor Recreation, University of Maryland. Gary has been involved in environmental writing with the BLM for four years. He coordinated work assignments and provided day-to-day project direction. Gary wrote the document introduction, description of the Alternatives and portions of the Wilderness sections.

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Bob Lund — State Office Review Team
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APPENDICES

APPENDIX 1.1: MAJOR MFP DECISIONS

The following are excerpts from the Valley Framework Plan.

OBJECTIVES	RECOMMENDATIONS	DECISIONS
	Valley MFP	
To identify and protect lands in the planning area of potential wilderness value and of adequate size for inclusion into the National Wilderness System.	R-15.1 All areas within the planning unit of predominately public land which meet the basic criteria of: 1) 5,000 or more acres or of a manageable size to maintain essential wilderness characteristics; 2) roadless and; 3) of primitive character will be inventoried for wilderness characteristics and possible inclusion into the National Wilderness System by 1991. Lands in the planning unit presently identified as perhaps meeting the above criteria include: Ppr-001 Burnt Lodge Ppr-002 Timber Creek Ppr-003 Gravel Hill Ppr-004 Carpenter Creek Ppr-005 Bomber Ppr-006 Dog Creek North Ppr-007 Grant Creek Ppr-008 Lone Tree Ppr-009 Sage Creek	Recreation Recommendation R-7.1 is accepted.
	R-15.2 All wilderness study areas will be managed so as to preserve their wilderness characteristics. All current activities can continue subject to controls in order to protect wilderness values. Under the Organic Act, this provides for the continuation of existing mining use, grazing use and mineral leasing in the same manner and degree as was being conducted on October 21, 1976.	Accepted the Multiple-use Recommendations.

Source: BLM 1983

APPENDIX 1.2: ISSUE LETTER

United States Department of the Interior
Bureau of Land Management

July 1983

Dear Citizen:

The Bureau of Land Management (BLM) is starting a study of the 59,660 acre Bitter Creek Wilderness Study Area (WSA) located in northeastern Montana. The study area is in the Valley Resource Area of the BLM's Lewistown District. The study team will consist of personnel from both the Lewistown District Office and the Valley Resource Area Office in Glasgow. The study will result in preliminary recommendations to the Secretary of the Interior on the suitability or nonsuitability of the Bitter Creek Area for wilderness designation.

The BLM's decision to study the Bitter Creek Area was subject to appeal. Five appeals were received. All of the appeals were heard by the Department of the Interior's Board of Land Appeals (IBLA). On May 18, 1983, the IBLA made a final decision affirming the Final Inventory Decision of the Montana State Director that the Bitter Creek Area should be studied for its wilderness suitability.

Now that the appeals have been decided, I'd like to ask you to help us begin by making sure that we know all the issues that should be part of our study. I've enclosed a summary of the issues that arose during our two-year inventory of wilderness characteristics as well as during the protest and appeal periods.

Besides identifying additional issues, you may wish to discuss possible alternatives that might be analyzed in the study. These would be in addition to the All Wilderness and No Wilderness alternatives which definitely will be analyzed.

To better enable us to discuss the study with you personally, we have scheduled BLM personnel to be available from 1:00 p.m. to 8:00 p.m. in the Valley Resource Area Office in Glasgow on August 10 and 11.

If you can't stop by the resource area office, please take time to write. It would be most helpful if we could hear from you by August 28, 1983.

If you wish to continue to receive information about the Bitter Creek Study, please return the enclosed post card by August 28.

Thank you for your help so far and I look forward to working with you throughout the study.

Sincerely yours,

Glenn W Freeman

Glenn W. Freeman
District Manager

Enclosure

Appendix 2.1: ALTERNATIVES CONSIDERED BUT NOT RECOMMENDED FOR DETAILED ANALYSIS

Bitter Creek South Alternative

As Bitter Creek South is one of the three roadless tracts making up the Bitter Creek WSA, it was considered as a possible alternative. With this alternative 8,605 acres would be recommended as suitable for wilderness while 51,055 acres would be recommended as nonsuitable and would continue in multiple use management. During the planning process a number of factors were considered in determining a range of reasonable alternatives. Bitter Creek South was not considered a viable alternative for detailed analysis because:

1. Outstanding solitude is restricted to a very few isolated pockets because of the segments size, limited screening and location of boundary roads.

2. There is a potential manageability problem with access on a state owned inholding and from a lack of indentifiable boundaries between public and private land on the western edge of the segment.

3. The area contains a small infestation of leafy spurge which has the potential to spread.

4. This segment has a high percentage of pre-FLPMA oil and gas leases, is the closest segment to the known gas field and is easily accessible for exploration and/or development.

5. The area has the highest preponderance of proposed range projects in the Bitter Creek WSA including 450 acres for chiseling, 4 pit reservoirs and 2.5 miles of fence.

Bitter Creek West Alternative

Bitter Creek West is one of the three roadless tracts making up the Bitter Creek WSA and was considered as an alternative. This alternative would recommend 11,105 acreas as suitable for wilderness designation and 48,555 acres as nonsuitable. During the planning process it was determined that this alternative did not meet the criteria for detailed study because of questions of wilderness manageability, wilderness quality, and resource conflicts. The alternative was not considered viable for detailed study because:

1. Areas with outstanding solitude area limited due to the flat topography lack of screening vegetation and location of boundary roads. The area has the fewest wilderness attributes of the three segments.

2. There are 11 reservoirs scattered throughout the unit which would increase conflicts with solitude and naturalness when maintenance and/or reconstruction is necessary.

3. The 800 acres proposed for chiseling would be foregone.

4. The boundary is not manageable even with extensive use of signs, patrols etc., because it is on legal subdivisions rather than identifiable physiographic features.

5. Other than hunting, the area contains little or or no outdoor recreational values. Hunting is almost all vehicle based.

Appendix 3.1: Common Plant Species in the WSA

Common Name	Scientific Name
Grasses and Grasslike	
Western wheatgrass	Agropyron smithii
Little bluestem	Andropogon scoparius
Blue grama	Bouteloua gracilis
Plains reedgrass	Calamagrostis montanensis
Prairie sandreed	Calamovilfa longifolia
Carex	Carex spp.
Plains mulhy	Muhlengergia cuspidata
Sandberg bluegrass	Poa secunda
Needleandthread	Stipa comata
Green needlegrass	Stipa viridula
Half Shrubs/Forbs	
Fringed sagewort	Artemisia frigida
Milkvetch	Astragalus spp.
Leafy spurge	Euphorbia esula
Dotted gayfeather	Liatris punctata
Silverleaf scurfpea	Psoralea argophylla
Prairie thermopsis	Thermopsis rhombifolia
American vetch	Vicia americana
Cocklebur	Xanthium spp.
Shrubs and Trees	
Silver sagebrush	Artemisia cana
Nuttall saltbrush	Artiplex nuttallii
Rubber rabbitbrush	Chrysothamnus nauseosus
Creeping juniper	Juniperus horizontalis
Plains cottonwood	Populus sargentii
Quaking aspen	Populus tremuloides
Chokecherry	Prunus virginiana
Rose	Rosa spp.
Greasewood	Sarcobatus vermiculatus
Silver buffaloberry	Shepherdia argentea

APPENDIX 3.2: COMMON ANIMAL SPECIES IN THE WSA

Common Name	Scientific Name
Big Game	
Mule deer	Odocoileus hemionus
White-tailed deer	Odocoileus virginianus
Pronghorn antelope	Antilocapra americana
Upland Game Birds	
Sage grouse	Centrocercus urophasianus
Sharp-tailed grouse	Pedioctes phasianellus
Hungarian (gray) partridge	Perdix perdix
Waterfowl	
Canada geese	Branta canadensis
Mallard	Anas platyrhynchos
Pintail	Anas acuta
Gadwall	Anas strepera
Blue-winged teal	Anas discors
Fur-Bearing Mammals	
Coyote	Canis latrans
Muskrat	Ondatra zibethica
Beaver	Castor conadensis
Badger	Taxidea taxus
Skunk	Mephitis mephitis
Mink	Mustela vison
Weasel	Mustela spp.
Fox	Vulpes fulva
Predators	
Coyote	Canis latrans
Fish	
Rainbow trout	Salmo gairdneri
Largemouth bass	Micropterus salmoides
Threatened or Endangered Species	
Peregrine falcon	Falco peregrinus
Bald eagle	Halliaeetus leucocephalus
Gray wolf	Canis lupus

Source: BLM, 1981

APPENDIX 3.3: GEOLOGIC FORMATIONS, BITTER CREEK WSA

SYSTEM	SERIES	SYMBOL	FORMATION	GENERAL LITHOLOGIC DESCRIPTION
QUATERNARY		Qa	Alluvium	
TERTIARY		Tfg	Flaxville	Alluvial and glacial clay, sand, and gravel
CRETACEOUS	UPPER	Kfh	Fox Hills	Sandstone; conglomerate
		Kb	Bearpaw Shale	Shale; shale and sandstone; conglomerate
		Kjr	Judith River	Shale; shale and sandstone; sandstone interbedded with shale; conglomerate
		Kcl	Claggett	Shale; shale and sandstone; conglomerate
		Ke	Eagle	Shale; sandstone; conglomerate
		COLORADO SHALE Kul	Telegraph Creek	Shale
			Niobrara	Shale; shale interbedded with limestone
			Carlile	Shale; sandstone and shale
			Greenhorn	Shale; limestone
			Belle Fourche	Shale; sandstone
	LOWER	Kl	Mowry	Shale
			Thermopolis	Shale
		KJ	Dakota	Sandstone; sandstone and shale
			Fuson	Sandstone interbedded with shale; shale
			Lakota	Sandstone; sandstone interbedded with shale
JURASSIC	UPPER		Morrison	Shale and sandstone
			Swift	Sandstone; sandstone and shale; sandstone interbedded with limestone
			Sundance	Shale; sandstone; limestone
	LOWER		Piper	Shale; sandstone; shale and sandstone
TRIASSIC		TR	Chugwater	Limestone; shale and sandstone; anhydrite
			Dinwoody	Shale; sandstone; anhydrite
PERMIAN		PM	Phosphoria	Chert; limestone; shale and sandstone; sandstone and anhydrite
PENNSYLVANIAN			Tensleep	Sandstone
			Amsden	Limestone and sandstone
			Tyler	Sandstone; sandstone and shale; anhydritic sandstone
MISSISSIPPIAN			Heath	Shale
			Otter	Anhydritic shale
			Kibbey	Sandstone
			Charles	Anhydritic limestone
			Mission Canyon	Limestone
			Lodgepole	Limestone
DEVONIAN		DЄ	Bakken	Sandstone; sandstone and shale
			Three Forks	Dolomite; limestone; sandstone
			Bird Bear	Limestone
			Duperow	Limestone; anhydrite
			Souris River	Dolomite; sandstone; anhydrite
SILURIAN			Interlake	Dolomite
ORDOVICIAN			Bighorn	Dolomite interbedded with shale
CAMBRIAN			Emerson	Limestone; shale; sandstone
PRECAMBRIAN		pЄ$_3$		Quartzite and metamorphic
		pЄ$_1$		Metamorphic and granite

APPENDIX 3.4: Alpha-Numeric Rating System

Numerical Classification Scheme	Letter Classification Scheme (Level of Confidence)
1. The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.	A. The available data are either insufficient and/or cannot be considered as direct evidence to support or refute the possible existence of mineral resources within the respective area.
2. The geologic environment and the inferred geologic processes indicate low favorability for accumulation of minerals resources.	B. The available data provide indirect evidence, to support or refute the possible existence of mineral resources.
3. The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.	C. The available data provide direct evidence, but are quantitatively minimal to support or refute the possible existence of mineral resources.
4. The geologic environment, the inferred geologic processes, the reported mineral occurrences, the the known mines or deposits indicate high favorability for accumulation of mineral resources.	D. The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources.

APPENDIX 3.5: STATE ECOSYSTEM/LANDFORM REPRESENTATION EXISTING IN STATUTORY WILDERNESS

A. Ecosystem/Landform No.	Name	Existing Representations in Statutory Wilderness										
		BLM Acres		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Acres	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	1	20,847	N/A	N/A	N/A	N/A	N/A	N/A

B. Ecosystem/Landform No.	Name	Representations in Wilderness Endorsed by President - Pending Before Congress										
		BLM Acres		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Acres	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	15	161,480	N/A	N/A	N/A	N/A	N/A	N/A

C. Ecosystem/Landform No.	Name	Potential Sources of Representations						
		BLM WSAs			Other Agency WSAs*			
		District	No.	Acreage	Agency	Region, Park, Refuge	No.	Acreage
Bailey/	Grama/	Lewistown	5	75,680				
Kuchler	Needlegrass/	Miles City	4	77,765	N/A	N/A	N/A	N/A
No. 57	Wheatgrass	Butte	1	5,926				

*Includes areas administered by the State as Wilderness.

NATIONAL ECOSYSTEM/LANDFORM REPRESENTATION

A. Ecosystem/Landform No.	Name	Existing Representations in Statutory Wilderness							
		State	District	No.	Acreage	State	Agency	No.	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	1	20,847

B. Ecosystem/Landform No.	Name	Representations in Wilderness Endorsed by President - Pending Before Congress							
		State	District	No.	Acreage	State	Agency	No.	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	15	161,480

C. Ecosystem/Landform No.	Name	Location of BLM WSAs with Potential Representations			
		State	District	Number of Areas	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	Montana	Lewistown	5	75,680
			Miles City	4	77,765
			Butte	1	5,926

D. Ecosystem/Landform No.	Name	Location of Other Agency with Potential Representations*			
		State	District	Number of Areas	Acreage
Bailey/ Kuchler No. 57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A

*Includes areas administered by the State as Wilderness.

Source: BLM, 1981

APPENDIX 3.6: STATEWIDE WILDERNESS STATUS SUMMARY

A. Status of BLM Areas Under Study

County	BLM District	Unit Number	Total Acreage	Start Date	Completion Date	Status
Powell	Butte	MT-074-150	11,580	1982	1985	URA 2 Completed
Powell	Butte	MT-074-151a	11,380	1982	1985	URA 2 Completed
Powell	Butte	MT-074-151b	4,257	1982	1985	URA 2 Completed
Granite	Butte	MT-074-155	520	1982	1985	URA 2 Completed
Rosebud	Miles City	MT-027-701	8,440	1981	1984	MFP 2 Completed
Powder River	Miles City	MT-027-702	5,650	1981	1984	MFP 2 Completed

B. Recommendation Transmitted by This Report

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	Recommendation Acres Suitable	Recommendation Acres Unsuitable
Lewistown	Valley	Bitter Creek	MT-064-356	Bitter Creek	59,660	0	59,660

C. Completed BLM Studies -- Awaiting Presidential Recommendations

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Draft Recommendations
Miles City	Billings	Billings RMP	MT-067-205	Burnt Timber Canyon	3,955	3,955 ac. suitable
Miles City	Billings	Billings RMP	MT-067-206	Pryor Mountains	16,927	16,927 ac. nonsuitable
Miles City	Billings	Billings RMP	MT-067-207	Big Horn Timber	4,550	2,550 ac. suitable
Miles City	Billings	Billings RMP	MT-067-212	Twin Coulee	6,870	6,870 ac. nonsuitable
Butte	Headwaters	Headwaters RMP	MT-075-115	Black Sage	5,926	5,926 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-001	Ruby Mountains	26,611	15,615 ac. suitable 10,996 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-002	Blacktail Mountains	17,479	10,986 ac. suitable 6,493 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-034	Farlin Creek	1,139	610 ac. suitable 529 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-007	E. Fork Blacktail Deer Creek	6,180	6,180 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-022	Hidden Past Creek	15,475	15,475 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-026	Belle Limekiln Canyons	9,588	9,588 ac. nonsuitable
Butte	Dillon	Wilderness Planning Amendment/EIS for the Dillon RA	MT-076-028	Henneberry Ridge	9,756	9,756 ac. nonsuitable
Butte	Dillon	Wildeness Planning Amendment/EIS for the Dillon RA	MT-076-069	Axolotl Lake	6,578	6,578 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-256	Cow Creek	34,050	21,590 ac. suitable 12,460 ac. nonsuitable
Lewistown	Phillips	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-266	Antelope Creek	9,600	9,600 ac. suitable
Lewistown	Valley	Missouri Breaks Wilderness Suitability Study/EIS	MT-065-278	Burnt Lodge	13,730	13,730 ac. suitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-657	Seven Blackfoot	20,250	5,710 ac. suitable 14,540 ac. nonsuitable
Miles City	Powder River	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-684	Terry Badlands	43,165	29,020 ac. suitable 14,145 ac. nonsuitable
Lewistown	Judith	Missouri Breaks Wilderness Suitability Study/EIS	MT-068-246	Woodhawk	8,100	8,100 ac. nonsuitable
Lewistown	Havre	Missouri Breaks Wilderness Suitability Study/EIS	MT-066-253	Ervin Ridge	10,200	10,200 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-675	Bridge Coulee	5,900	5,900 ac. nonsuitable
Miles City	Big Dry	Missouri Breaks Wilderness Suitability Study/EIS	MT-024-677	Musselshell Breaks	8,650	8,650 ac. nonsuitable

D. Statutory Wilderness (all agencies)

Agency	County(s)	Unit Name & Number	Unit Acreage
BLM	Madison	Bear Trap Canyon	6,000
	Total BLM	Number of Areas 1	6,000

Agency	County(s)	Unit Name & Number	Unit Acreage
USFS	Carbon, Stillwater, Sweet Grass, Park	Absaroka-Beartooth, NF 106	920,377
USFS	Granite, Ravalli, Deer Lodge, Beaverhead	Anaconda-Pintler, NF 003	157,874
USFS	Flathead, Teton, Lewis & Clark, Powell	Bob Marshall, NF 005	1,009,356
USFS	Lincoln, Sanders	Cabinets, NF 010	94,272
USFS	Lewis & Clark	Gates of the Mountains, NF 027	28,562
USFS	Flathead Lake	Great Bear, NF 107	286,700
USFS	Missoula	Mission Mountains, NF 050	73,877
USFS	Missoula	Rattlesnake, 1-801	20,000
USFS	Lewis & Clark, Powell	Scapegoat, NF 073	239,296
USFS	Ravalli	Selway-Bitterroot, NF 074	248,893
USFS	Granite	Welcome Creek, NF 103	28,135
USFS	Madison	Lee Metcalf	253,000
	TOTAL USFS	Number of Areas 12	3,360,342

Agency	County(s)	Unit Name & Number	Unit Acreage
USFWS	Beaverhead	Red Rock Lakes, WR-036	32,350
USFWS	Sheridan	Medicine Lake National Wildlife Refuge, WR-027	11,800
USFWS	Phillips	UL Bend National Wildlife Refuge, WR-047	20,847
	TOTAL USFWS	Number of Areas 3	64,997

Agency	County(s)	Unit Name & Number	Unit Acreage
NPS	N/A	N/A	N/A

Agency	County(s)	Unit Name & Number	Unit Acreage
State Administered	N/A	N/A	N/A

F. Recommendations Pending Before Congress (all agencies)

Agency	County(s)	Unit Name & Number	Unit Number	Unit Acreage*
USFS	Lincoln	Cabinet Face West	C 1670	8,250
USFS	Sanders, Lincoln	Scotchman Peaks	A & B 1662	60,416
USFS	Sanders	Cabinet Mountain Addition	C 1681	442
USFS	Sanders	Chippewa Creek (Cabinet Mountain Addition)	1682	382
USFS	Sanders	McKay Creek	B 1676	6,510
USFS	Ravalli	Schley Mountain (Great Burn)	D 1301	12,600
USFS	Ravalli	Woodoo (Great Burn)	Q 1301	65,097
USFS	Ravalli	Blodgett Canyon	1051	9,600
USFS	Ravalli	N. Fork, Lost Horse	1062	8,598
USFS	Ravalli	Trapper Creek	1063	2,867
USFS	Ravalli	Nelson Lake	1064	3,233
USFS	Ravalli	Meadow Creek	M 1845	12,600
USFS	Ravalli	Swift Creek	1065	700
USFS	Ravalli	Needle Creek	1066	1,175
USFS	Ravalli	Selway-Bitterroot Addition	S 188	12,700
USFS	Beaverhead	North Big Hole	B 1001	7,027
USFS	Deer Lodge	Storm Lake	1427	6,065
USFS	Granite	Quigg (Slide Rock)	C 1807	60,050
USFS	Beaverhead	West Big Hole	1 1943	56,462
USFS	Beaverhead	East Pioneer (Torey Pk.)	1008	87,746
USFS	Madison, Gallatin	Lionhead	1963	20,899
USFS	Park	Republic Mountain (N. Absaroka Addition)	1545	480
USFS	Park	Reef (N. Absaroka Addition)	1914	427
USFS	Carbon	Lost Water	1362	9,500
USFS	Rosebud	Tongue River	1373	16,600
USFS	Missoula, Powell	Great Bear-Bob Marshall Scapegoat-Swan	B 1485	3,825
USFS	Powell, Lewis & Clark	Clearwater-Monture	O 1485	65,385
USFS	Lewis & Clark	Park Bridge	U 1485	3,255
USFS	Lewis & Clark	Renshaw	W 1485	25,649
USFS	Lewis & Clark	Leavitt Creek	T 1485	2,400
USFS	Lewis & Clark	Silverking Falls Creek	F 1485	38,300
USFS	Lewis & Clark	Big Log	W 1610	9,272
	TOTAL USFS	Number of Areas 33		618,512

* All Acreages Approximate

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
USFWS	Garfield	East Seven Blackfoot	FW 923-1	12,184
USFWS	Phillips	Mickey Butte	FW 923-2	17,413
USFWS	Phillips, Valley	Burnt Lodge	FW 923-3	22,976
USFWS	Garfield	Billy Creek	FW 923-4	11,556
USFWS	Garfield	West Seven Blackfoot	FW 923-5	7,096
USFWS	Phillips	Antelope Creek	FW 923-6	5,382
USFWS	Garfield	West Hill Creek	FW 923-7	11,896
USFWS	Petroleum	Fort Musselshell	FW 923-8	8,303
USFWS	Garfield	Sheep Creek	FW 923-9	12,424
USFWS	Phillips	West Beauchamp	FW 923-10	6,736
USFWS	Garfield	Wagon Coulee	FW 023-11	10,528
USFWS	Petroleum	Alkali Creek	FW 923-12	6,592
USFWS	Petroleum	Crooked Creek	FW 923-13	6,842
USFWS	Garfield	East Hell Creek	FW 923-14	15,984
USFWS	Garfield	East Beauchamp	FW 923-15	5,568
	TOTAL USFWS	Number of Areas 15		161,480

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
NPS	Flathead, Glacier	Glacier	NP-915	917,600
NPS	Park, Gallatin	Yellowstone	NP-928	167,060
	TOTAL USFWS	Number of Areas 2		1,084,660

F. Other Agency Areas Under Study

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
USFS	Lincoln	Ten Lakes	1683	33,885
USFS	Lincoln	Mt. Henry	1666	21,000
USFS	Ravalli	Blue Joint Mt.	A 1941	61,400
USFS	Granite, Powell	Flint Range	1428	52,220
USFS	Granite, Powell	Dolus Lake	1429	9,100
USFS	Granite, Ravalli	Sapphires	1421	98,815
USFS	Teton	Deep Creek	P 1485	26,068
USFS	Teton	Reservoir North	H 1485	1,520
USFS	Beaverhead	West Pioneer	1006	147,992
USFS	Madison	Middle Mtn.-Tobacco Roots	B 1013	36,640
USFS	Jefferson, Broadwater	Bullock Hill	A 1620	59,980
USFS	Jefferson, Broadwater	Casey Peak	E 1620	25,000
USFS	Gallatin, Park	Gallatin Divide	G 1548	81,582
USFS	Gallatin, Park	Hyalite	H 1548	22,268
USFS	Beaverhead	Mt. Jefferson	1962	4,600
USFS	Fergus, Golden Valley	Big Snowies	A,B,S 1739	95,851
USFS	Meagher, Judith Basin	Middle Fork Judith	1734	91,000
USFS	Beaverhead	Italian Peak	I 1945	12,996
	TOTAL USFS	Number of Areas 20		871,927

* All Acreages Approximate

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Big Horn	Big Horn Canyon	N/A	7,645
	TOTAL NPS	Number of Areas 1		7,645

G. Ecosystem/Landform Representations of Areas Recommended in this Report

Ecosystem/Landorms Represented by Unit Name: Gramma/Needle-grass/Wheatgrass No. 057

Number of Existing Representations in Statutory Wilderness

Number of Representations in Wilderness Endorsed by the President

		State		Region		NWPS		State		Region		NWPS	
Unit Number	Unit Name	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency
MT-064-356	Bitter Creek	N/A	1	N/A	1	N/A	15	N/A	15	N/A	15	N/A	15

H. Population Centers Within One Day's Travel of Areas Recomended in This Report

N/A

Appendix 4.1

Methodology Used to Assess Ranch Related Economic Impacts

The ranch related economic impacts include the major impacts identified through scoping and public input and those identified by Leroy Luft, Agricultural Management and Economic Consulting (AMEG) (1982). Luft assessed the impacts of wilderness designation on ranch management costs and ranch loan and sale values. These impacts include increased costs due to limitations on vehicle way use and potential problems arising from restrictions on water development construction.

Some motor vehicle use on vehicle ways would be allowed under wilderness designation. For instance, the use of vehicles for hauling in bulls, hauling out sick animals, etc. would continue. However, most of these activities can occur outside the Wilderness Study Area (WSA) but within the allotments.

The following analysis will assess the additional cost incurred because casual vehicle use to check cows, water, fences, etc. would not be allowed. The methodology used is based on AMEC's (1982) study.

The additional cost to check cows and repair fences is based on the number of miles of fence and vehicle ways, the number of operators and the substitution of horses for casual vehicle use within the WSA. Annual vehicle costs are estimated to be about $2 per mile of fence repaired while to cover a comparable area on horseback costs $12 per mile. Agricultural Management and Economic Consulting (1982) estimates it would take two to three times as long to cover an area on horseback as it would by vehicle and vehicle ways would be used two times per month for six months to check cows. Table 1 lists the miles of fence and vehicle ways within the WSA by alternative and the additional maintenance expense and hours of labor annually.

Table 1: Miles of fence and vehicle ways and additional expense and hours of labor annually by alternative.

	Miles of		Additional Annual	
Alternative	Fence	Vehicle Ways	Expense ($)[1]	Labor (hrs)
Proposed Action (No Wilderness)	0	0	0	0
All Wilderness	59.40	19.5	530	640
Bitter Creek East	44.00	12.5	450	460
Enhanced	25.25	10.5	360	260

[1] Excludes additional labor.

It is assumed that maintenance on range improvements would continue as needed. Most maintenance can be accomplished in a nonimpairing manner and is justifiable for resource protection and grazing management. However, wilderness designation could create possible conflicts with the location of new water development and maintenance on existing improvements. Stress associated with poor water distribution and trailing long distances between forage and water contributes to poor conception rates. Maximum livestock conception can only be obtained when both forage and water are adequate.

Appendix 4.2: Wilderness Impact on Loan and Sale Values

The impact of wilderness designation on loan and sale values is an issue. Agricultural Management and Economic Consulting (1982) contacted a variety of people concerning this issue and found that lenders would place a lower lending value on an operation containing wilderness.

Lenders would also restrict the length of the loan to an operator with designated wilderness. The potential loss in loan value could vary from a 20% reduction to the worst case situation where none of the BLM grazing in wilderness would be valued for loan purposes. The potential loss in loan value is shown in Table 2 by alternative.

The assumptions used to define these values are:

1. a partial reduction in loan value (20%); or
2. none of the BLM grazing in wilderness would be valued for loan purposes; and
3. the value of an AU (animal unit) on BLM administered land is .6 that of a deeded AU for lending purposes. With a deeded AU valued at $1,800, a BLM leased AU has a loan value of $1,080 ($1,800 x .6 = $1,080).

The total loss in value by alternative was calculated as follows: the total AUMs for each alternative are divided by 12 which gives the number of AUs; the number of AUs are multiplied by $1,080 and this equals the loan value of BLM grazing by alternative (AUMs divided by 12 = AUs) and AUs x $1,080 = loan value).

This loss of loan value is considered short term. After several years without a change in livestock use levels, lenders would probably be more willing to value BLM grazing permits in wilderness areas for lending purposes. The potential loss of loan value is shown by alternative not operator, since BLM has no data on the lendability of individual operators. The impact of these dollar values on operators would vary with their dependency on WSA grazing.

Almost no information on the impact of wilderness designation on sale value was available. Agricultural Management and Economic Consulting (AMEC) (1982) found that it is probable that wilderness designation would give potential buyers concern. Land values may be lower for ranch operations with potential wilderness when compared to similar units without. The cumulative impacts of increased costs and reduced loan value are difficult to assess because they depend upon the specific financial situation of the individual operators.

Table 2: Range in Potential Loss in Ranch Loan Value by Alternative

Alternative	Range of Potential Loss in Loan Value ($1,000)[1]
Proposed Action (No Wilderness)	0
All Wilderness	132-659
East	84-421
Enhanced	54-269

[1] Assumes a partial reduction in loan value of 20% and a total reduction in loan value.

GLOSSARY

ACCELERATED EROSION. Erosion increased by human activities; also see "Natural Geologic Erosion."

ALLOTMENT MANAGEMENT PLAN (AMP). A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

ANIMAL UNIT MONTH (AUM). A standardized unit of measurement of the amount of forage necessary for the complete subsistence of one animal unit (one cow or one horse or five sheep, all over six months old) for one month.

BAILY-KUCHLER SYSTEM. A classification system that divides the United States into ecosystems based on climate, vegetation, soils and landform.

CHERRY-STEMMED ROAD. A road that enters but doesn't pass completely through a wilderness study area.

CULTURAL SITE. Any location that includes prehistoric and/or historic evidence of human use.

ECOSYSTEM. An ecological community together with its physical environment. Its functioning involves the circulation of matter and energy between organisms and their environment.

ENVIRONMENTAL IMPACT STATEMENT (EIS). A written analysis of the impacts on the environment of a proposed project or action.

FEDERAL LAND POLICY AND MANAGEMENT ACT (FLPMA). Public Law 94-579, October 21, 1976, referred to by the Bureau of Land Management as its "Organic Act," which provides most of BLM's legislated authority, direction, policy and basic guidance.

GRANDFATHERED ACTIVITY. Any land-surface disturbance or alteration that occurred in a wilderness study area before passage of FLPMA (see above).

GROSS BUSINESS VOLUME. The total output in an area or region measured in dollars.

HABITAT. A specific set of physical conditions that surround a species, group of species or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover and living space.

INHOLDINGS. State or privately-owned lands inside a wilderness study area.

INTERIM MANAGEMENT POLICY (IMP). A BLM document which defines the policy for management of wilderness study areas until a final determination on wilderness designation is made by Congress.

KNOWN GEOLOGIC STRUCTURE (KGS). Areas known to contain producible oil and gas deposits.

LAND UTILIZATION (LU) LANDS. Land re-acquired and managed by BLM through the Bankhead Jones Act of 1937.

LEASABLE MINERALS. Minerals subject to lease by the Federal Government, including oil, gas and coal.

LIVESTOCK SALES. Receipts from the sale of livestock and livestock products. Livestock sales were estimated at $18.96/AUM (estimated from the N.D. Grazing EIS Ranch Budget analysis).

LOCATABLE MINERALS. Generally the metallic minerals subject to development specified in the Federal Mining Law of 1872.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes, for a given planning area, land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each class of land use protection. It is the BLM's land use plan. An MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decision making.

MULTIPLE USE. Balanced management of the various surface and subsurface resources, without permanent impairment of the productivity of the land that will best meet present and future needs.

NATURAL. Refers to an area which generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable.

NATURAL GEOLOGIC EROSION. The wearing away of the land's surface by running water, wind, ice or other geological agents, unaffected by human activities.

OFF-ROAD VEHICLE (ORV). Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

OUTSTANDING. Standing out among others of its kind; conspicious; prominent; or, superior to others of its kind; distinguished; excellent.

PERMIT (GRAZING). An authorization that permits the grazing of a specified number and head of livestock on a designated area of BLM lands for a period of time, usually not more than one year.

PERMIT VALUE. The market value of a BLM grazing permit which is often included in the overall market value of the ranch.

PRE-FLPMA LEASES. Mineral leases issued pryor to passage of the Federal Land Policy and Management Act of October 21, 1976.

POPULATION CENTER. An SMSA (see below) with a population of 100,000 or more.

POST-FLPMA LEASES. Mineral leases issued after passage of the Federal Land Policy and Management Act of October 21, 1976.

PRIMITIVE RECREATION. Nonmotorized outdoor recreation that requires undeveloped areas in which to take place.

PUBLIC LANDS. Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

RECREATIONAL OPPORTUNITY. Those outdoor recreation activities which offer satisfaction in a particular physical, social and management setting. In the EIS areas, these activities are primarily hunting, fishing, wildlife viewing, photography, boating and camping.

SIMULTANEOUS LEASING (OG SIM). Oil and gas estates on public lands leased through lottery-type drawings.

SOLITUDE. The state of being alone or remote from habitations; isolation or a lonely, unfrequented or secluded place.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A county containing at least one city with 50,000 inhabitants plus any adjacent urban territory.

TACK-ON. Public lands with wilderness characteristics but less than 5,000 acres in size adjacent to other public lands designated as wilderness or being studied for such designation.

VEHICULAR WAY. A trail maintained solely by the passage of vehicles.

VISUAL RESOURCES. The land, water, vegetation and animals that comprise the scenery of an area.

WILDERNESS AREA. An area formally designated by an act of Congress as part of the National Wilderness Preservation System.

WILDERNESS MANAGEMENT. The management of human use and influence on lands which have been designated by an Act of Congress as wilderness areas.

WILDERNESS STUDY AREA (WSA). An area determined to have wilderness characteristics. Study areas will be subject to interdisciplinary analysis and public comment to determine wilderness suitability. Suitable areas will be recommended to the President and Congress for wilderness designation.

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